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International Issue

Telephony

DECEMBER 22, 1986

COVERING TELECOMMUNICATIONS SINCE 1901

IRELAND STEPS UP TELECOM ACTIVITY

FCC poised to cut AT&T, BOC regulation

INTELSAT board OKs PanAmSat

France may pull out of European cellular plan

AT&T, Intel agree on ISDN compatibility

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TOP HEADLINES

FCC set to slash AT&T, BOC regulation 12

AT&T, Intel set ISDN compatibility 12

WASHINGTON NEWS

Patrick suggests regulation changes 14

INTELSAT board gives nod to PanAmSat 14

RHC clout enlisted in trade troubles 14

NEWS OF THE WEEK

France throws wrench in cellular plan 22

U S West cuts back sales efforts 22

Chicago becomes all-electronic 22

AS WE SEE IT

The Dangers of 'Technospeak'

The gap between the technical and lay mind must be closed to ensure that telecommunications realizes its full potential 27

DEPARTMENTS

Advertisers' Index 94

Meetings 11

Merits & Milestones 96

Moving Around Industry 79

New Products and Services 56

News of the Week 22

Plant Man's Notebook 52

Top Headlines 12

Washington News 14

NETWORK OPERATIONS/IRELAND

Ireland Boosts Its Efficiency

By Liam Dillon. Telecom Eireann is focusing its efforts on converting COs to digital switching, improving the reliability of the PSTN and reducing the number of held orders 28

RURAL AND REMOTE/UNITED STATES

You CAN Fool Mother Nature

By Dick Thompson. To beat the elements in its operating territory, West Texas Rural Tel went underground 34

PRICING POLICY/EUROPE

Bundespost Leads the Way

By David Rogerson. A minor victory for a European PTT may turn out to be a significant factor in the future of international telecom 36

REPORT/UNITED STATES

Globecom '86 Draws 2000+

By Sandra Williamson. The IEEE-sponsored meeting covered everything from satellite communications to home electronic systems standards . . 42

PREVIEW/MEXICO

Staking a Claim

By Patricia Tobin. Attendees and exhibitors could reap the benefits of the Mexican International Exhibition on Telecommunications and Computing for years to come 46

PREVIEW/UNITED STATES

ISS'87 Hails Switching Evolution

By Elizabeth Schultz. Participants from approximately 68 countries will discuss the next revolution in switching 48

Ireland Boosts Its Operational Efficiency

The Martello Towers were built to help Ireland solve a pressing communications problem during the Napoleonic Wars nearly two centuries ago. The tower shown on our cover, Tower No. 1 near Dublin, was built between 1804 and 1806. It is owned by Paul Doonan of Carra Comm/Tec, a family-owned business which sells Reliance Comm/Tec products in Ireland. The Irish have steadily improved the national means of communications since then. In the last three years, Telecom Eireann has taken some important steps to further improve communications within the Republic of Ireland.

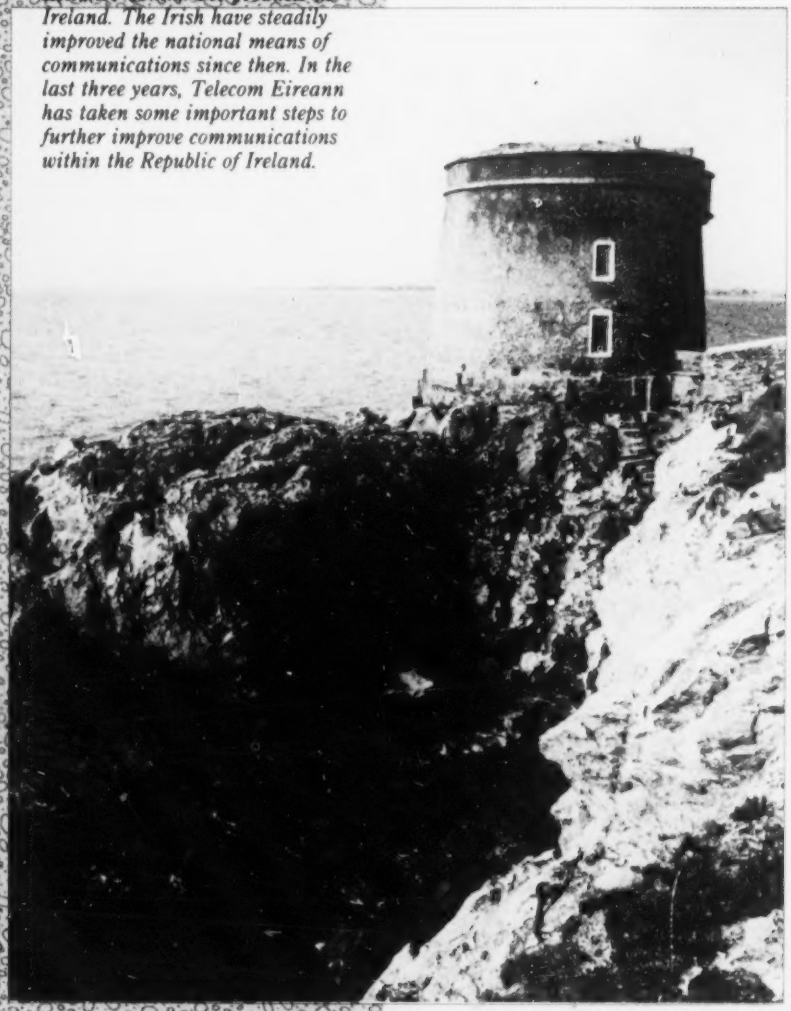

Photo by Gary Moss

LIAM DILLON

THE IRISH have been concerned about the quality of our communications for centuries.

For instance, early in the 19th century, during the long Napoleonic Wars, a series of 30 towers was built along the coast. Known as Martello Towers, they were within sight of each other so if an invasion force approached, the defenders could quickly and efficiently communicate via bonfires and signal flags. The towers also doubled as well-armed fortifications, should an appeal to arms be made.

The Martello Towers were built to last and they have. Unfortunately, they also were expensive to build and maintain. Today, Ireland continues to build its communications system to last and searches for economic solutions for its communications problems. And we are succeeding at both tasks.

Three years ago, the nation decided to reorganize its communications efforts. The Department of Posts & Telegraphs was dissolved. Telecom Eireann is now responsible for the national public switched network.

Telecom Eireann's agenda was dominated by three items. One was the need to convert its central offices to digital switching technology. The second was to improve the reliability of the PSTN. And the third was to reduce the number of held orders—unfilled customer requests for service—throughout Ireland.

We have made significant progress in central office conversions. In 1985-86 alone, 91 digital exchanges went into service, bringing the total to 294, serving some 30% of customers in Ireland. Furthermore, 78 manual exchanges serving some 9000 customers were upgraded to automatic service. Now, fewer than 2% of all customers are still switched manually. By the end of 1987, the network should be fully automatic.

That is an impressive achievement when it is recalled that just eight years ago, nearly 50% of all exchanges serving some 10% of all customers were manual. In other words, we had a large number of small switches serving relatively few subscribers, with a poor ratio of subscribers per switch.

We also have set and are maintaining aggressive objectives for im-

Liam Dillon is Senior Group Head in the Material and Transport Department at Telecom Eireann, Dublin, Ireland.

provements in overall service quality. For example, the failure rate target of 2% or less on local calls was attained in 1985-86. And we are making progress toward a 4% failure rate for national subscriber trunk dialing service.

To enhance troubleshooting and maintenance capabilities in the important Cork area in the southeast, we established our first computerized fault recording and test/repair center. Additional centers will soon be completed in and around Dublin, our capital and most important economic center.

Of everything we have been able to accomplish, however, perhaps of greatest note is that we are increasing our customer base by slashing the number of held orders. As a result, we have achieved a record household-penetration rate of more than 50%, with telephone exchange lines in the network numbering 713,000.

Consider that in 1980, held orders stood at about 92,000, with a total customer base of 472,000. Thanks to projects initiated at that time and efforts that are part of a Telecom Eireann Accelerated Development Program, held orders at this moment amount to less than 2.9% of our current customer total of 694,000. Held orders have been reduced to just 20,000 in only six years. By next year, the backlog should be limited to normal pipeline requirements.

Installation intervals have seen similar improvements. Today, about 50% of the time, customers receive initial service between six and eight weeks after application.

Cable installation projects during the past several years have dramatically improved the backbone of the local network and have contributed significantly to reducing held order headaches. In the year ending April 1986, for example, £12 million ($16.368 million) was invested in local cable and 70,000 utility poles were used, a rate slightly below the previous year. Prior to this intense period of construction, a less conventional technology—at least in the experience of the old Department of Posts and Telegraphs—was introduced as a stopgap measure. Beginning in 1980 and peaking in 1983, thousands of channels of analog subscriber carrier were installed in a wholesale effort to quickly clear large numbers of held orders, some of which were backlogged by seven years.

From a practical point of view, subscriber carrier was a natural solution for installing new customers in areas where cable facilities had been exhausted.

Through studies we conducted when considering purchasing such equipment, however, we found the use of carrier to be competitive with cable in numerous circumstances.

- *When there is no existing plant available.* A 48-channel system working on a 10/0.63 aerial cable on a new pole route becomes the least costly solution beyond 6 km from the exchange.
- *When there is existing empty duct.* With 15/0.5 cable, a 48-channel system is less expensive beyond a distance of 11 km from the exchange.
- *Where there is existing pole route carrying only open wires or trunk cable.* Where this circumstance prevails, two points must be considered.

First, if the route can accommodate a 75/0.63 cable without rebuilding, it would be the least costly method for providing service up to 6.6 km. Thereafter, a 48-channel subscriber carrier system working on a new 10/0.63 cable would be a more cost-effective approach.

Second, if the route cannot support a 75/0.63 cable but will accept a 10/0.63 cable, a 75/0.63 cable on a rebuilt route would be prudent up to 4 km. Subsequently, a 48-channel carrier system on a new 10/0.63 cable would be the least costly solution.

After conducting our application studies, we studied the equipment market and selected subscriber carrier products from R-TEC Systems, a Reliance Comm/Tec unit located in Bedford, Texas. We have relied on these products throughout the

Continued on page 32

Technicians Eddy Buggle (l) and Peter Egan (c) of Telecom Eireann discuss digital technology with Pat Doonan, president of Carra Comm/Tec, at one of Telecom Eireann's COs.

FIGURE 1 USE OF SUBSCRIBER CARRIER IN IRELAND 1980-1986

YEAR	HELD ORDERS	TELEPHONE LINES INSTALLED	CHANNELS OF CARRIER INSTALLED		% OF CONNECTIONS VIA CARRIER
			SINGLE CHANNEL	MULTICHANNEL	
1980 (end of)	92,000	62,000	1300	240	2.5
1981	86,450	68,000	0	3040	4.4
1982	78,000	58,500	6000	5920	11.4
1983	60,250	54,600	0	8640	12.0
1984	50,513	76,000	4460	4032	8.4
1985	27,736	75,000	4000	0	5.3
1986 (estimated)	20,000	78,000	0	4600	5.0
TOTAL		472,100	15,760	26,472	8.9

1980s, with the results indicated in Table 1.

One of our first purchases was the manufacturer's AML-II single channel carrier system, which electronically doubles the capacity of an existing cable pair or provides a pair gain factor of one. Terminals are installed both at the subscriber premise and in the central office. CO modules are just 5.23 in. high and are mounted in 19-in. or 23-in. racks.

Single channel carrier allowed us to quickly and inexpensively offer service in awkward situations, such as when a single customer was waiting for service in an area where no new cable installation was imminent. Not only could customers be hooked to the network quickly, but a return was immediately earned from the equipment. If cable had been specified in the same situation, much of the investment would have lain fallow until more customers were installed.

For higher-density applications, three versions of the CM-8 multichannel carrier have been used. This configuration is functionally identical to AML-II, but the pair-gain factor is seven. This means that on a single pair of cable, eight customers can be served.

Originally, the 48-channel version of the multichannel was employed, but an enhanced 24-channel model has now been standardized by Telecom Eireann. Called CM-8 Hi-Density, this version offers greater reliability because of an improved powering configuration. It also is an extremely compact package, with 24 channels occupying only 7 in. of height in a 19-in. central office rack. Each rack contains three systems, each comprising four modem cards and one common equipment card.

The system is designed to operate over a frequency line loss of 40 dB without the use of repeaters. Under normal limits, the system operates out to 140 dB using a maximum of three repeaters.

Since 1980, more than 42,000 channels of single and multichannel carrier have been installed in Ireland's eight districts. The first equipment was used in the Cork District, which had the worst held order delay. During 1983 and 1984, the use of carrier was so widespread in Cork that up to 20% of all new customer connections made during that time involved this electronic technology. During the same period, up to 12% of new installations nationwide used subscriber carrier.

Once subscriber carrier proved itself to be an effective tool, a number of creative applications were developed. For example, rural areas commonly contain scattered sites with 30 to 100 lines where it is not economical to install a central office. In such cases, carrier now is often specified to consolidate service and then, in combination with copper cable, fed into centrally located automatic exchanges.

Subscriber carrier also proved to be very much at home under urban conditions. As a temporary solution, the multichannel carrier system has been used in the center of Dublin to connect apartment buildings and office blocks, even in short-run circumstances where cable may have been cheaper.

With the success of new cable projects under way as part of Telecom Eireann's Accelerated Development Program, the need for new subscriber carrier is on the wane. Part of the beauty of carrier products, however, is that they can be removed and recycled at other locations when their original function is supplanted by the installation of permanent cable. The equipment can be reinstalled and continue to generate revenue in a second life.

While the held order problem in Ireland has been dramatically reduced, it has not been eliminated. There are still roughly 20,000 potential customers, or about 5% of the total subscriber base, waiting for service. So, it is likely that subscriber carrier will remain part of the solution for some time to come.

And Telecom Eireann will continue its massive commitment to capital improvements. In the 1985-86 period, this amounted to £29 million, and nearly that again by the end of the 1986-87 year. The liability associated with this aggressive effort, however, is our £1.1 billion debt.

Nearly all other current statistical indices are very encouraging. Net demand for customer lines in 1985-86 was 62,000, spurred perhaps because of a 33% reduction in connection charges. Traffic was up 10%. International calling increased by a hefty 12%.

The bottom line is that operating revenues for 1985-86 were £75 million, up 44% from the previous period. Although a £24 million deficit was recorded for the year with the inclusion of financing charges, Telecom Eireann has established a positive and durable tone for the future of telecommunications in the Irish Republic, both technologically and financially.

Like the Martello Towers, our system will function efficiently and it will last, in large part thanks to our efforts to control costs by using innovative technology. □

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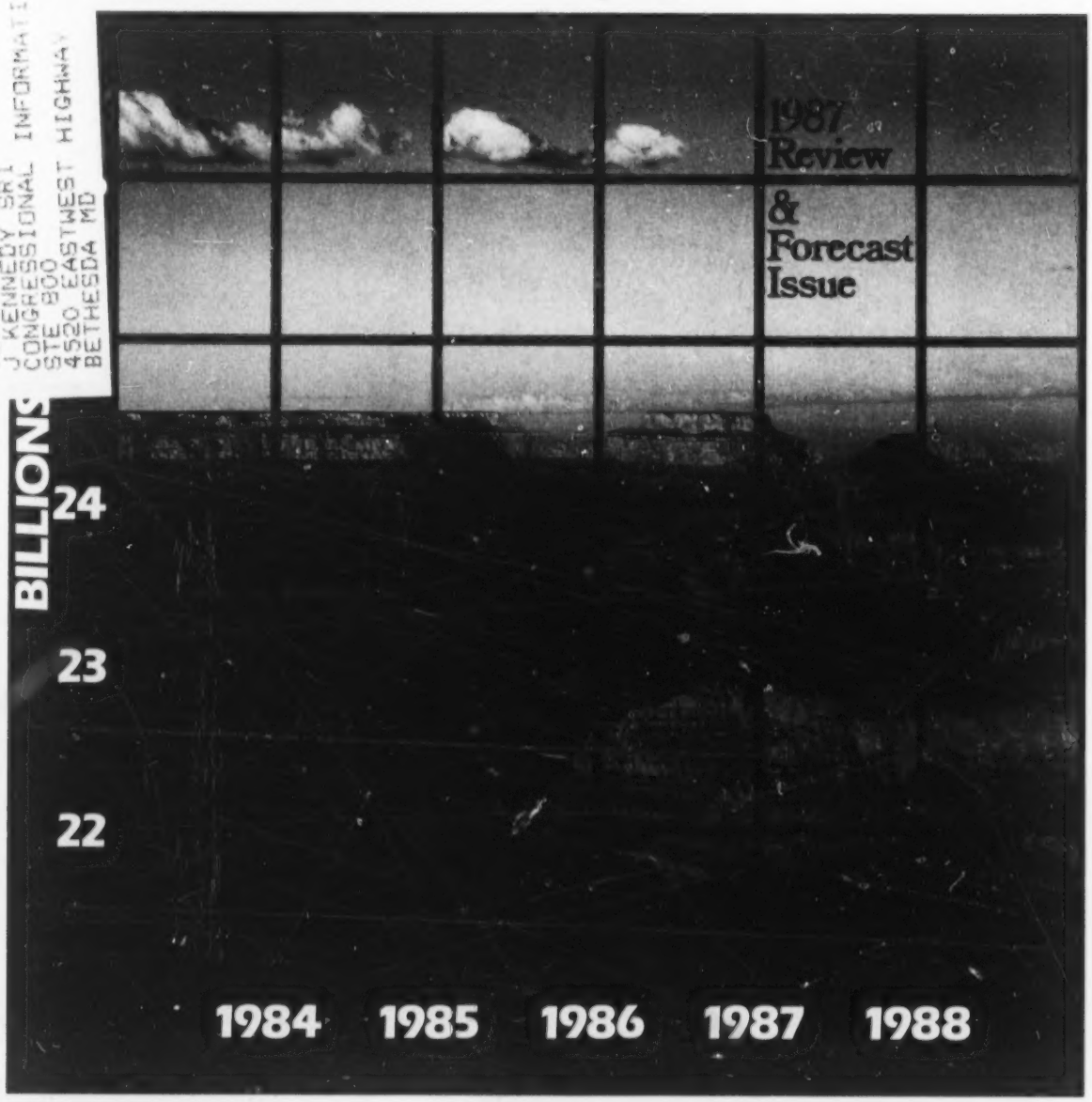


SPENDING HITS $24 BILLION PLATEAU

AT&T implements FCC-ordered rate cut

Greene nixes Southwestern Bell electronics venture

Siemens unit buys Tel Plus

Centel, Alltel pull plug on Argo

Telephony

COVERING TELECOMMUNICATIONS SINCE 1901

JANUARY 12, 1987

TOP HEADLINES

AT&T rate cuts squeeze competitors 13

Macmillan acquires Telephony Publishing 13

WASHINGTON NEWS

Greene discards waiver recommendation 16

Commenters jab AT&T transfer plan 16

House introduces trade bill 21

NEWS OF THE WEEK

Siemens Info Systems to buy Telecom Plus . . . 26

Alltel, Centel pull ARGO plug 26

AT&T lands major Navy contract 26

AS WE SEE IT

A New Start, A New Year, An Old Commitment
TELEPHONY's move into the Macmillan family of publications gives it added resources to maintain and improve its editorial product 37

DEPARTMENTS

Advertisers' Index 111

Helpful Literature 112

Meetings 11

Moving Around Industry 93

New Products and Services 74

News of the Week 26

Plant Man's Notebook 72

Top Headlines 13

Washington News 16

REVIEW AND FORECAST

Carrier Spending Hits $24 Billion Plateau
By Czatdana Inan and Larry Lannon. Competition among carriers continues to increase, but fewer carriers plan to gain market share by simply spending money 40

Leaders Comment on the Industry's State
Key players in telecommunications assess their firms' progress and the industry as a whole . . 52

A Year of Activity and Uncertainty
By Carol Wilson. Even large companies were not immune from the turmoil of the changing telecom market 68

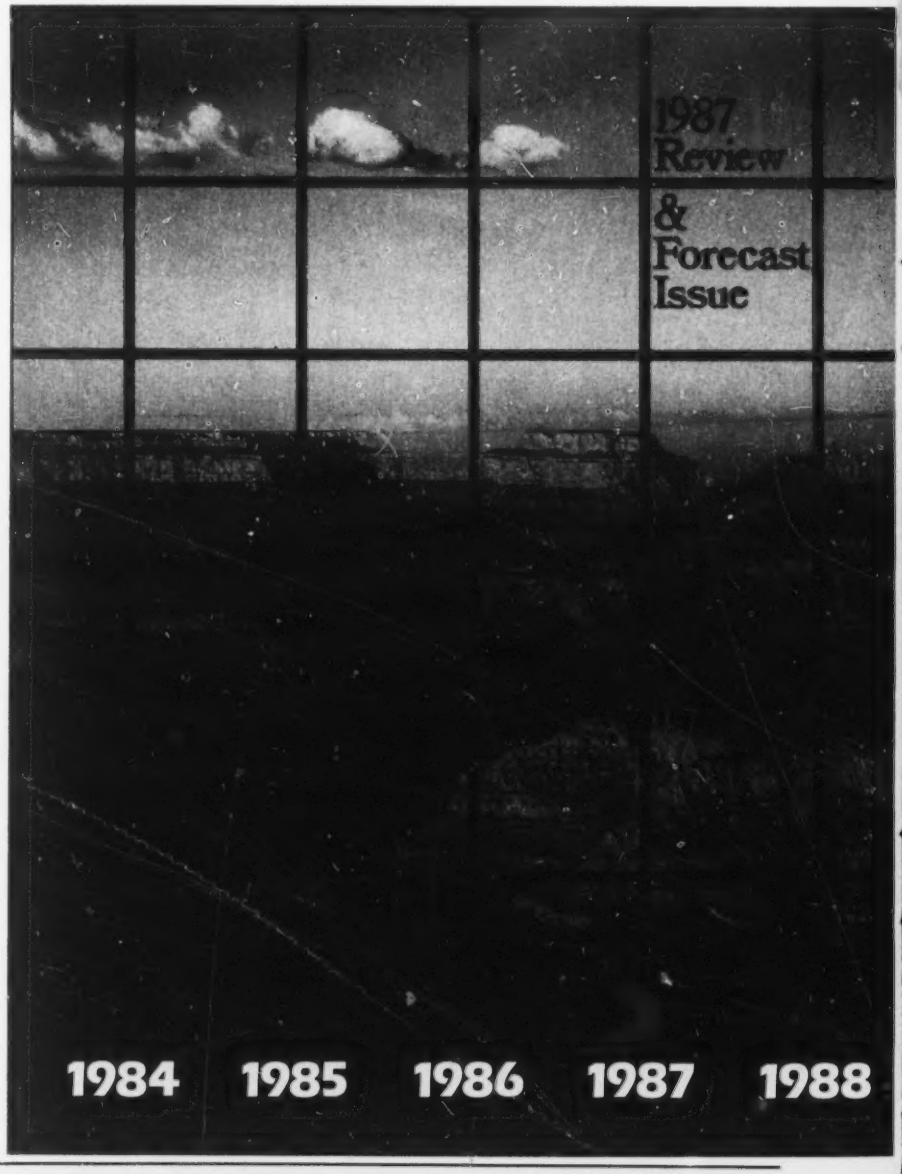
A Battle Waged on Many Fronts
By Patricia Tobin. Industry members took many approaches in their quest in Washington to achieve a level playing field 70

Carrier Spending Hits a $24 Billion Plateau

CZATDANA INAN, MARKET RESEARCH DIRECTOR, AND LARRY LANNON, EDITOR

For the third consecutive year, U.S. local exchange and interexchange carriers will spend roughly $24.5 billion in 1987. That number is likely to shrink slightly in the next few years as carriers refine their responses to intensifying competition.

Cover art by Jim Colao,
cover photo by A.J. Hartman/Comstock



AGGREGATE spending by both local exchange and interexchange carriers in the United States has hit a plateau. No signs which indicate that industry spending levels will budge far from the current plateau in the immediate future are visible.

LECs and IXCs will spend roughly $24.55 billion in 1987, according to research conducted by the Market Research Department of TELEPHONY. The coming year will be the third year in a row aggregate spending by U.S. carriers has hovered around $24.5 billion. In 1985, U.S. carriers spent about $24.37 billion and last year they spent $24.54 billion.

Spending by U.S. carriers is expected to increase by $10 million, far less than 1%, from $24.54 billion in 1986 to $24.55 billion. The rate of growth expected for the coming year is thus significantly less than the growth rate reported for last year, when the 1985 expenditure of $24.37 billion increased some $170 million, also less than 1%, to $24.54 billion.

Further, the flat 1987 growth rate in carrier spending will decline slightly in 1988, when many carriers are expected to try to boost earnings by trimming expenditures.

Spending patterns being established today differ radically from the sharp growth of the 1983-84 period. Spurred by divestiture and intensifying competition, LEC carrier spending rose sharply from $21.83 billion in 1984, the year the divestiture agreement took effect, to $24.37 billion the following year, an annual growth of approximately 12%. Though competition among carriers continues to increase, fewer carriers are planning to compete simply by spending ever larger sums of money in pursuit of market share.

Clearly, carrier investment switch-

Continued on page 42

THE SOURCE

This article is based on the 1987 Carrier Market Forecast, this year's version of an annual study done by TELEPHONY's Market Research Department. The study is available to the public. For more information, contact Market Research Director Czatdana Inan, TELEPHONY, 55 E. Jackson Blvd., Suite 1100W, Chicago, Ill. 60604; telephone: (312) 922-2435.

TABLE 1 LOCAL EXCHANGE CARRIERS' POST-DIVESTITURE BUDGETS

EQUIPPED LINES[a] JUNE 30, 1986	EST. YEAR-END % EQUAL ACCESS 1985	1986	1987		POST-DIVESTITURE CONSTRUCTION SPENDING ACTUAL 1984	1985	ESTIMATED 1986	1987	1988
				7 REGIONALS					
				Ameritech					
4,802,832	59%	82%	92%	Illinois	500.6	673.6	654.7	655.0	675.0
1,724,981	55	81	84	Indiana	196.4	207.5	228.0	224.0	200.0
4,522,325	46	72	81	Michigan	427.0	464.0	529.0	555.0	569.0
3,559,431	51	79	82	Ohio	355.6	342.9	361.4	367.8	342.9
1,835,468	73	94	95	Wisconsin	203.6	208.3	190.0	180.0	180.0
16,445,037					1,683.2	1,896.3	1,963.1	1,981.8	1,966.9
				Bell Atlantic					
6,618,942	46	nr	nr	C&P Companies	777.7	929.2	940.0*	925.0*	910.0*
4,898,800	46	81	91	New Jersey	538.8	519.0	501.0*	500.0*	490.0*
5,880,000*	85	93	97	Bell of PA	532.0	629.0	709.0	690.0*	685.0*
17,397,742					1,848.5	2,077.2	2,150.0	2,115.0	2,085.0
				BellSouth					
7,738,789	52	64	80	South Central	952.7	1,020.2	1,029.0*	1,065.0*	1,042.9*
8,678,178	69	81	88	Southern Bell	1,321.3	1,594.9	1,608.1	1,727.3	1,708.1
16,416,967					2,274.0	2,624.1	2,628.1	2,792.3	2,751.0
				Nynex					
10,004,500	39	55	63	New York	1,108.3	1,248.6	1,292.0	1,346.8	1,328.0
5,290,000*				New England	769.0	853.0	751.0	817.0	836.0
15,294,500					1,877.3	2,101.6	2,043.0	2,163.8	2,164.0
13,400,000*	nr	73	85*	Pacific Telesis	2,040.3	2,163.1	1,978.7	1,950.0*	1,930.0*
10,926,934	54	78	84	Southwestern	1,719.9	1,952.3	1,896.0	1,775.0	1,779.5
				U S West					
6,394,887	54	77	80	Mountain	900.4	1,003.3	890.0	850.0	830.0*
3,432,154	40	63	65	Northwestern	409.3	531.4	428.0	426.9	446.8
2,877,121	44	85	92	Pacific NW	352.0	394.0	390.0	368.0	350.0*
12,704,162					1,661.7	1,928.7	1,708.0	1,644.9	1,626.8
				TOP 18 INDEPENDENTS					
12,094,000	3	52	75	GTE	2,173.0	2,365.0	2,506.0	2,467.0	2,428.0
3,558,522	0	1	18	United	509.4	564.4	550.0	625.0	600.0
2,308,504	nr	9	13	Contel	469.8	439.4	455.9	457.8	432.9
1,674,000*	nr	nr	nr	SNET	214.0	246.0	285.0	355.0	340.0*
1,343,232	8	19	42	Centel	162.8	165.6	185.1	174.6	178.2
20,978,258					3,529.0	3,780.4	3,982.0	4,079.4	3,979.1
846,000	0	19	30	Alltel	146.0	166.0	170.0	154.0	153.0
887,051	21	58	86	Cincinnati	59.5	85.2	79.7	69.0	73.8
704,668	nr	nr	nr	Puerto Rico Tel	109.4	114.9	170.0	190.0	160.0
475,000	36	66	86	Rochester	56.8	94.4	84.9	95.1	83.2
240,024	nr	nr	nr	Century	37.3	39.1	40.6	36.0	40.0
3,152,743					409.0	499.6	545.2	544.1	510.0
239,640	nr	nr	nr	TDS	28.1	27.7	32.4	31.7	30.0*
221,271	0	59	85	Lincoln	30.4	30.9	33.9	31.5	31.6
241,965	nr	47	53	Pacific Telecom	30.8	48.7	45.0	40.7	45.1
185,192	nr	nr	nr	C-TEC	20.7	22.4	25.2	27.5	29.4
115,145	0	0	0	Anchorage	41.7	53.2	57.0	37.8	47.8
87,160	0	0	0	Illinois Cons	11.0	12.0	10.5	7.9	7.9
108,637	0	0	0	Citizens Ut	21.1	19.3	30.2	36.3	22.0
75,000*	nr	nr	nr	CP National	15.2	19.2	20.5	20.0*	20.0*
1,274,010					199.0	233.4	254.7	233.4	233.8
				LECs' TOTALS					
102,585,342				7 Regionals	13,105.7	14,743.6	14,366.9	14,422.8	14,303.2
25,405,011				Top 18 Independents	4,137.0	4,513.4	4,781.9	4,856.9	4,722.9
6,351,000*				Other Independents	730.1	796.5	843.9	857.1	833.5
134,341,353					17,972.8	20,053.5	19,992.7	20,136.8	19,859.6
				LEC +/− 1985 view versus current view		+0.6%	+0.7%	−1.0%	−1.8%
				Current view of 1988 versus 1987					−1.4%

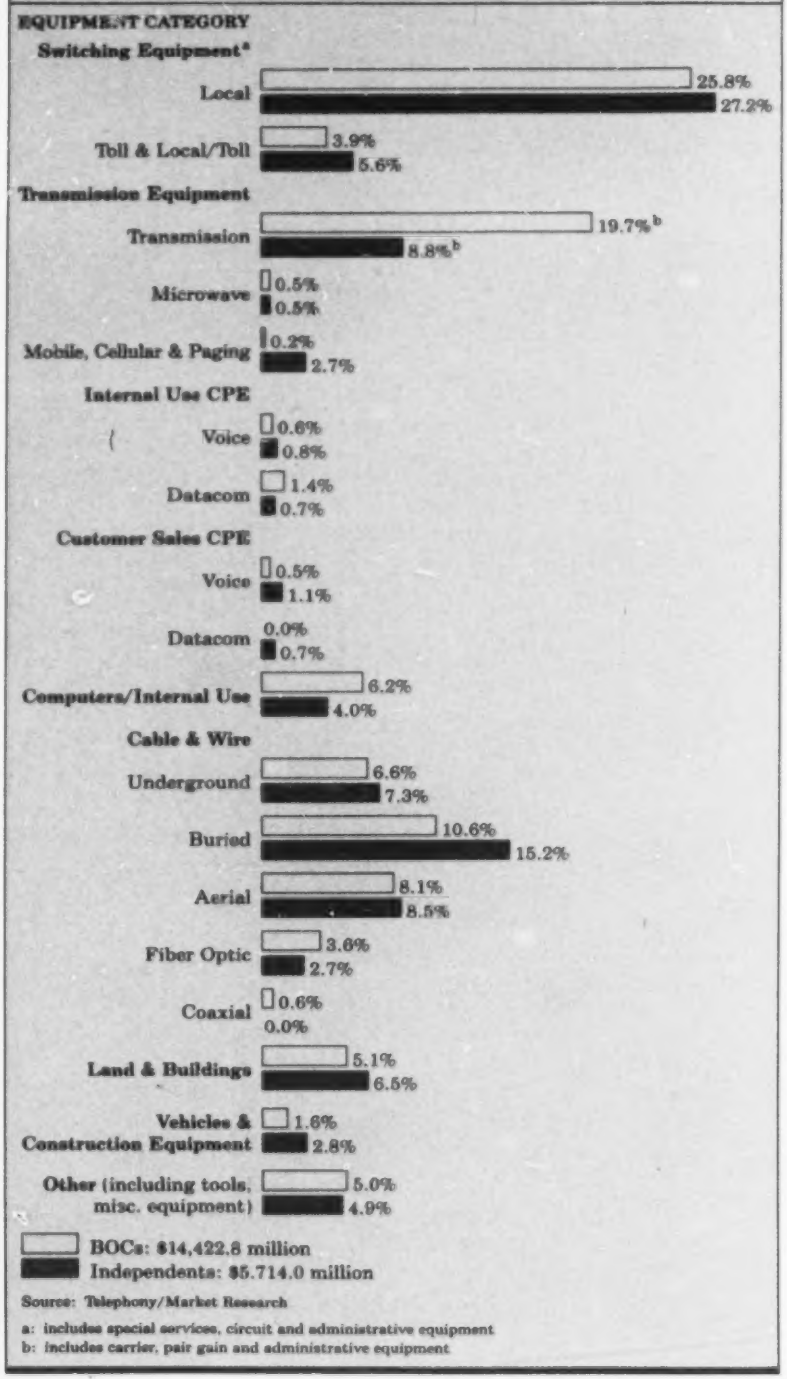
Source: Telephony/Market Research

* estimated by Telephony

nr: no report

a: access lines are generally 85% of total equipped lines

FIGURE 1 LECs' DISTRIBUTION OF 1987 CAPITAL EXPENDITURES



ing and transmission technology will continue to be substantial. This spending is largely aimed at the business customer, the key to all carriers' futures. No carrier can hope to retain, much less attract, more business customers if it does not have a top-notch network based on sophisticated applications of leading edge switching and transmission technologies.

As the capabilities of telecommunications technology increase, the level of network-based competition rises. Business customers know what the latest telecommunications technologies can provide, and refuse to accept any standard but the best, which means maximum capability tailored to each customer's specific business needs at the lowest possible price.

High customer expectations, thus, will ensure that all carriers continually strive to improve and refine their networks. The carriers' efforts, in turn, will ensure that aggregate spending by U.S. carriers will remain healthy, though it will dip from its current plateau.

The LECs will again dominate spending by U.S. carriers. As always, LECs can be divided into three distinct groups.

The first, the regional holding companies, will continue to be the most important economic players in the industry. The second group, the top 18 Independents, will play a far more important economic role than the third group, the other Independents, though the other Independents include more than 1400 individual companies. Of course, the fourth segment of the carrier market, the IXCs, also will continue to play a crucial role.

LECs will spend $20.14 billion and IXCs will spend $4.39 billion this year.

The economic importance of the RHCs is almost impossible to exaggerate. The RHCs—or, more precisely, their operating telephone company subsidiaries—will account for 60% of all expenditures by U.S. carriers in 1987. The total expenditures by the RHCs are expected to be $14.42 billion this year. The RHCs will account for roughly 72% of all 1987 LEC expenditures. The Independents, of course, will account for the remaining 18%.

The 18 largest Independents are expected to spend $4.86 billion in 1987. The five largest Independents—GTE, United, Contel, Southern New England and Centel—will account for $4.08 billion, or 84%, of the expenditures made by the top 18 Independents and roughly 24% of all LEC expenditures this year.

The 18 largest Independents include seven companies which will spend more than $100 million in 1987. Those companies and the amounts they plan to spend this year are:

- GTE, $2.47 billion;

Continued on page 44

- United, $625 million;
- Contel, $457.8 million;
- Southern New England, $355 million;
- Puerto Rico Tel, $190 million;
- Centel, $174.6 million; and
- Alltel, $154 million.

The seven largest Independents, thus, will spend roughly $4.42 billion of the $4.86 billion the 18 top Independents will spend. The seven Independents with 1987 budgets in excess of $100 million also will account for roughly 77% of the $5.71 billion Independents of all sizes will spend this year.

The next 11 largest Independents will spend a total of $433 million in 1987. In order, those 11 large Independents and the amounts they will spend in 1987 are:

- Rochester, $95.1 million;
- Cincinnati Bell, $69 million;
- Pacific Telecom, $40.7 million;
- Anchorage, $37.8 million;
- Citizens Utilities, $36.3 million;
- Century, $36 million;
- TDS, $31.7 million;
- Lincoln, $31.5 million;
- C-TEC, $27.5 million;
- CP National, $20 million; and
- Illinois Consolidated, $7.9 million.

All the other Independents combined will spend a total of approximately $843.9 million during 1987.

These small telcos represent approximately 4% of LEC expenditures. For a breakdown of the projected expenditures of the LECs, see Table 1.

Considered in purely economic terms, the structure of the LEC industry resembles a comet with a huge, dramatic head and a very long tail trailing away gradually into very small, individual elements. Without a tail, there cannot be a comet. But it is the head of the comet to which the eye is most readily attracted—and it is the larger LECs, particularly the RHCs, which attract the most attention in the marketplace.

Individual RHCs each will spend billions of dollars in 1987. In order, they will spend:

- BellSouth, $2.79 billion;
- Nynex, $2.16 billion;
- Bell Atlantic, $2.12 billion;
- Ameritech, $1.98 billion;
- Pacific Telesis, $1.95 billion;
- Southwestern Bell, $1.78 billion; and
- U S West, $1.65 billion.

The sheer size of the RHCs' expenditures is noteworthy. Among all other carriers, only AT&T Communications, which will spend about $2.5 billion this year, and GTE, which will spend slightly less than $2.5 billion in 1987, are comparable. But perhaps the shifts in RHC spending which will occur relative to 1986 expenditures are even more significant. Those shifts presage changes which will sweep the LEC industry in the post-1987 period, and reflect similar shifts already visible in the Independent sector of the LEC industry.

Specifically, four of the seven RHCs will spend less in 1987 than they did in 1986. Only Ameritech, BellSouth and Nynex will increase their expenditures in the coming year. Bell Atlantic will cut its expenditures from an estimated $2.15 billion in 1986 to $2.12 billion in 1987. Pacific Telesis will trim its outlays from $1.98 billion in 1986 to $1.95 billion in 1987. Southwestern Bell plans to spend $1.78 billion in 1987, down from the $1.9 billion it spent last year. U S West will cut its expenditures from $1.71 billion in 1986 to $1.65 billion in 1987.

Nynex will increase its expenditures from $2.04 billion in 1986 to $2.16 billion in 1987. BellSouth's $2.79 billion outlay in 1987 will be up from the $2.63 billion it spent last year. Ameritech will spend $1.98 billion in 1987, up from the $1.96 billion it spent last year.

Last year, four of the seven RHCs increased their expenditures and three trimmed theirs. This year, those numbers are reversed.

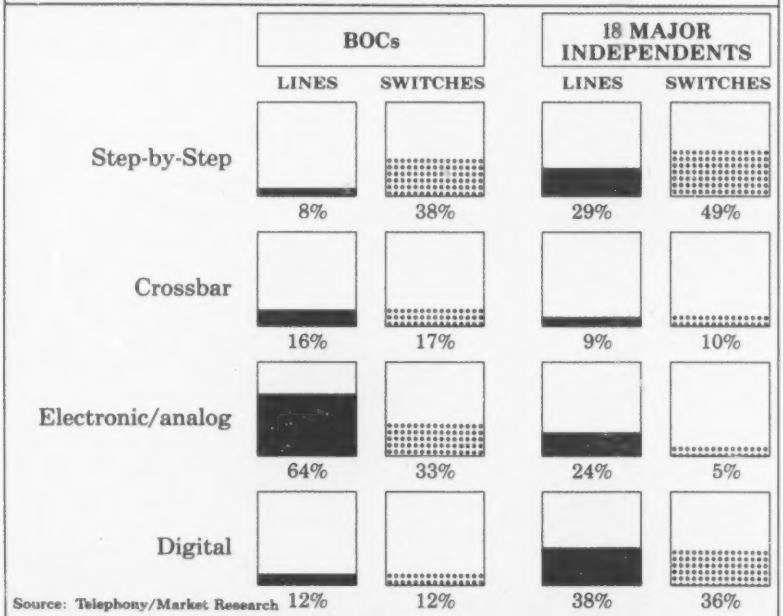
The $2 billion per year figure continues to be an interesting benchmark for RHC expenditures. No RHC is expected to move past the $2 billion figure this year, nor are any current members of the $2 billion club expected to trim their expenditures by enough to drop out of the club.

Thus, RHC expenditures seem to have entered a period of stability. The most visible trend is to cautiously and carefully cut costs. But no one is cutting costs too dramatically. Many of the larger Independents seem to be following the RHCs' pattern.

The same trend is visible among the IXCs, though it is less pronounced. Aggregate IXC spending of $4.39 billion in 1987 will represent 18% of total LEC expenditures during the year. Five IXCs dominate the

Continued on page 46

FIGURE 2 LECs' DISTRIBUTION OF LOCAL SWITCHES AND EQUIPPED LINES*



Source: Telephony/Market Research

a: base is 122.1 million lines and 8,608 switches for BOCs.
25.3 million lines and 8,067 switches for 18 Major Independents

TABLE 2 INTEREXCHANGE CARRIERS' POST-DIVESTITURE COMPOSITE

	NET REVENUES + ACCESS CHARGES = GROSS REVENUES						1986 MARKET SHARE	
	NET REVENUES ($000,000)			ACCESS CHARGES ($000,000) FOR LOCAL INTERCONNECTION			NET REVENUES vs. REVENUES[a]	GROSS
	1984	1985	1986	1984	1985	1986		
AT&T Communications	$15,780.8	$17,267.6	$19,081.3[b]	$20,633.0	$21,521.2	$19,850.7[b]	74.6%	80.2%
MCI	1,959.3	2,542.3	3,562.3[c]	479.7	874.0	1,570.1[c]	13.9%	10.6%
US Sprint[d]	1,467.1	1,687.0	2,120.0[e]	532.0*	676.0*	1,063.0*	8.3%	6.6%
ALC Communications	343.0	436.3	465.0[f]	171.1	201.7	263.7[f]	1.8%	1.5%
NTN	g	g	350.0[g]	g	g	180.0*	1.4%	1.1%
	$19,550.2	$21,933.2	$25,578.6	$21,815.8	$23,272.9	$22,927.5		
Increase/Decrease		+12.5%	+16.6%		+6.7%	−1.5%		
Less NTN		+12.5%	+15.0%		+6.7%	−2.3%		

	CONSTRUCTION EXPENDITURES ($000,000)				1984-87	4-YEAR	1984-86 SPENDING AS %
	1984	1985	1986	1987	SPENDING	AVERAGE	PERIOD'S NET REVENUES
AT&T Communications	$1,341.9	$2,108.9	$2,396.1	$2,500.0*	$ 8,346.9	$2,086.7	11.2%
MCI	1,157.2	1,000.1	950.0	800.0	3,907.3	976.8	38.5%
US Sprint	1,330.0	1,025.0	920.0*	900.0	4,175.0	1,043.8	62.1%
ALC Communications	22.7	36.9	36.0	36.0*	131.6[h]	32.9	na
NTN	4.5	150.0	250.0	150.0	554.5	138.6	na
	$3,856.3	$4,320.9	$4,552.1	$4,386.0	$17,115.3	$4,278.8	
Increase/Decrease		+12.0%	+5.4%	−3.6%			

Source: Telephony/Market Research

* estimated by Telephony

na: not applicable

a: base is sum of net revenues and access charges

b: estimated on $14.3 billion and $14.9 billion, respectively, first 9 months of 1986.

c: estimated on $2.7 billion and $1.2 billion, respectively, first 9 months of 1986.

d: combined GTE Sprint and US Telecom.

e: based on estimated revenues of $1.5 billion, first 9 months of 1986.

f: estimated on $348.3 million and $197.8 million, respectively, first 9 months of 1986.

g: projected revenues of first full year of operation. National Telecommunications Network (NTN) consortium, formed February 1986, includes Consolidated Network (St. Louis, MO), LDX (Chesterfield, MO), Litel (Worthington, OH), Microtel (Boca Raton, FL), SouthernNet (Atlanta, GA), Southland Fibernet (Pensacola, FL) and Williams Telecommunications (Tulsa, OK).

h: does not include leased facilities.

market. AT&T Communications continues to lead the market in expenditures by a very wide margin. The company will spend roughly $2.5 billion this year, or about 57% of total IXC expenditures.

The second leading IXC continues to be MCI, which plans to spend $800 million in 1987. The fourth and fifth largest IXCs—ALC Communications and the National Telecommunications Network—will spend $36 million and $150 million, respectively.

The wild card in the IXC deck is US Sprint, a company formed by the merger of US Telecom and GTE Sprint in mid-1986. In our 1986 spending survey, GTE Sprint was the third largest IXC and US Telecom was the fifth largest. US Sprint is building a state of the art fiber optic transmission network and plans to compete by offering the high quality service the fiber optic technology can provide.

In 1987, US Sprint will spend roughly $900 million, or about $100 million more than MCI.

For details of IXC spending plans for 1987, as well as information about market share, the relationships among net revenues, access charges and gross revenues for each of the IXCs and spending as a percentage of net revenues, see Table 2.

For both LECs and IXCs, the business community continues to be the marketing focus. The twin keys to defending and expanding market share continue to be deployment of digital switches and high capacity transmission links, especially fiber optic technology. The importance of switching and transmission technologies to LECs is shown in Figure 1, which breaks 1987 LEC budgets down into their major components. The figure shows that local and toll switching equipment, the three types of transmission equipment, and cable and wire expenditures will total roughly 79% of RHC capital expenditure budgets this year and approximately 78.5% for the Independents.

Figure 2 demonstrates the importance of digital switching to LECs. Note that the 18 major Independents have converted a larger proportion of their switches to digital technology than the RHCs have. The RHCs have embarked on an intense program to move as rapidly as possible toward further digitalization of their switching vehicles.

A similar and parallel effort is being made in the transmission network. Fiber optic cable is playing an ever more important role. Table 3 indicates how heavily RHCs are relying on fiber optic technology.

LECs also are striving to improve the efficiency with which they monitor and operate their increasingly sophisticated and complex networks. Carriers are computerizing their operations as much as possible. Table 4 compares expenditures by two RHCs, Ameritech and BellSouth, on both fiber optic and computer technologies. It suggests that the drive to offer better services to business customers, indicated by the expenditures on fiber optic technology, is at least matched by a corresponding drive to increase control over high capacity networks, indicated by ex-

Continued on page 48

penditures on computers for internal uses.

Animated though they are by the necessity of competing effectively for business customers, LECs in today's highly competitive market are keenly aware of the need to show consistently strong earnings, in part by imposing cost reductions. The drive to provide more sophisticated services for ever more demanding business customers, which entails substantial expenditures on switching and transmission technologies, as well as on computer applications which facilitate operational efficiency, is accompanied by a drive to boost earnings by controlling costs. These dual drives could come into conflict, and will place increasing importance on top management's ability to keep them in a productive balance.

The relationship between these dual drives is most developed among the RHCs. In general, RHCs have indicated that they plan to fund construction expenditures solely from internal sources, reducing debt. They hope to lower debt ratios to 40% by the early part of the next decade while achieving annual growth rates in revenues of at least 5%.

In order to achieve its complex goals of competing for business customers, improving earnings and more tightly controlling expenditures, reducing debt and increasing annual revenues, top management must carefully establish priorities. Different RHCs, responsive as they must be to their regional economies, are certain to establish different priorities, in the process creating increasingly differentiated companies. The old Bell System may have been monolithic and the newly divested RHCs may have looked alike at birth, but today the economic pressures which are destined to forge highly individual companies from the supposedly common clay of the old Bell operating companies are doing their work, gradually but inexorably.

Those economic pressures actually are working more rapidly than the RHCs expected when they began their corporate lives.

Projected spending levels by RHCs set in 1985 are lower than initially planned. As Table 1 indicates, aggregate RHC spending levels are down by nearly 2% from 1985 projections. But the difference between individual RHCs is far more instructive than the aggregate level.

Southwestern Bell has cut its spending by 27.4% from 1985 projections. Ameritech has trimmed its 1987 expenditures by 2.7% from 1985 projections. BellSouth, on the other hand, has increased its 1987 expenditures by a robust 9.3% over its 1985 projections.

Unexpected changes in plans are not accidental. They reflect the increasing importance of regional economies and a movement by RHCs toward shorter planning cycles. The condition of the regional economies is of primary importance in formulating long- or short-term plans.

The Southwest, for instance, has been economically devastated by a slump in three essential sectors—mining, energy and agriculture. Southwestern Bell's reduced plans

Continued on page 92

TABLE 3 RHCs' INSTALLED FIBER OPTIC CABLE AS OF JUNE 1986

	LOCAL SUBSCRIBER		JUNCTION (TOLL)	
	SHEATH MILES	FIBER MILES	SHEATH MILES	FIBER MILES
Ameritech				
Illinois	302	11,328	905	11,473
Indiana		a		a
Michigan	757	28,575	71	1,238
Ohio	328	7,247	15	87
Wisconsin	569	nr	nr	nr
Bell Atlantic				
C&P Companies	902	nr	313	nr
New Jersey	139	11,834	274	24,566
Bell of Pa.		b		b
BellSouth				
South Central	558	14,304	1,825	26,465
Southern Bell	nr	80,607	nr	20,475
Nynex				
New England				
New York	281	nr	998	nr
Pacific Telesis		c		c
Southwestern	1,514	d	1,480	d
US West				
Mountain Bell	900	3,000	900	17,000
Northwestern	408	nr	1,585	nr
Pacific NW	nr	18,389[e]	nr	6,177[f]

Source: Telephony/Market Research
nr: no report
a: 1,013 sheath miles and 15,372 fiber miles in subscriber and toll network 12/31/85
b: 1,309 sheath miles and 40,000 fiber miles in subscriber and toll network
c: 68,900 fiber kilometers installed in subscriber and toll network 12/31/85
d: 100,078 fiber miles in subscriber and toll network 12/31/86
e: does not include 147 fiber miles of submarine cable
f: does not include 14 miles of submarine cable

TABLE 4 SELECTED BOC 1987 FIBER VS. COMPUTER SPENDING

	FIBER OPTICS		COMPUTERS/INTERNAL	
	$000	% BUDGET	$000	% BUDGET
Ameritech				
Illinois	20,960	3.2	28,820	4.4
Indiana	11,424	5.1	16,128	7.2
Michigan	27,750	5.0	33,300	6.0
Ohio	14,344	3.9	20,229	5.5
Wisconsin	11,160	6.2	17,820	9.9
	85,638		116,297	
BellSouth				
South Central	41,535	3.9	39,405	3.7
Southern Bell	55,274	3.2	86,365	5.0
	96,809		125,770	

Source: Telephony/Market Research

Spending

Continued from page 48

reflect the dramatically changed economic status of its service territory. The Midwest has also been hit hard by the slump in agriculture, but problems on the farm have been offset to some extent by good economic news elsewhere, though the auto industry, a mainstay of the regional economy, continues to tread water. Thus, Ameritech has adjusted, rather than changed, its economic course. Significantly, its adjustment has been to slightly lower its projected expenditures. The Southeast continues to enjoy a period of strong economic growth. BellSouth's spending plans clearly signal that its management expects the regional economy to sustain its growth rate during the life of the planning period.

Buoyed by strong economic performances during the past three years, some large Independents are planning to increase their spending during 1987. Among the five largest Independents, United is planning to spend an additional $75 million in 1987. Contel will spend $2.1 million more this year and SNET will boost its spending by $70 million.

On the other hand, GTE will trim its 1987 expenditures by $39 million. Centel will cut $10.5 million from its 1986 estimated expenditures.

Only Puerto Rico Tel and Rochester of the next tier of five large Independents will increase their spending in 1987. Rochester will spend $10.2 million more in the coming year than it did in 1986. Puerto Rico Tel will spend a full $20 million more this year than it did last. Alltel, which spent an estimated $170 million in 1986, plans to spend $154 million in 1987, a reduction of $16 million. Cincinnati Bell will spend $10.7 million less this year than it did in 1986, and Century will spend $4.6 million less.

Of the next group of eight large Independents, only two will spend more in 1987 than they did in 1986. C-TEC will increase its spending by $2.5 million, and Citizens Utilities will boost its spending by $6.1 million.

Lincoln will cut its expenditures by $2.4 million in '87. TDS will reduce its expenditures by $700,000 and Pacific Telecom by $4.3 million this year. Illinois Consolidated will cut its expenditures by $2.6 million and CP National by $500,000. Anchorage will slash its expenditures by $19.2 million.

The other Independents, the tail of the comet, will increase aggregate expenditures from $843.9 million in 1986 to $857.1 million in 1987, an increase of $13.2 million, or 1.5%.

No carrier is planning to pad its bottom line merely by reducing expenditures, of course. They also hope to boost revenues from existing customers and add new customers. The picture is clearest at the RHCs.

All RHCs hope to increase usage by—and revenues from—existing customers by enhancing the value of their capabilities. Data traffic, especially, offers significant growth potential, assuming the RHCs are freed from constraints upon their activities in the data market. However, even today, when the divestiture agreement sharply restricts the RHCs, 20% of the traffic on the public switched telephone network is data traffic. It is not only the RHCs which are already handling large volumes of data traffic, either. A full 15% of GTE's volume consists of data traffic and the figure for Centel is 16%.

Digital switches and fiber optic transmission links all increase the facility with which LECs can handle data traffic. The increasing deployment by LECs of packet switched networks will further enhance their data-handling capability. The LECs are preparing for the day when telemetry, electronic mail and electronic banking, electronic shopping and electronic security services become socially and economically significant.

LECs, particularly the RHCs, are also aggressively pursuing new business ventures in related fields. To cite just one example, Southwestern Bell in 1986 acquired most of Metromedia's cellular business. Southwestern Bell's move put it in the nonwireline side of the cellular business as well as the wireline side, and brought it into competition with other RHCs' wireline operations.

During 1987, competition in carrier markets promises to be sharper than ever. Carriers which previously have not competed with one another find themselves face-to-face in related markets. Since the growth markets are also the markets in which the competition will be the hottest, those face-to-face confrontations will take on increasing importance as every carrier attempts to pull ahead in the race for increased earnings.

Market share alone will not determine winners and losers. Profitability, which may or may not be a function of market share depending on the artistry of management, is the key.

Thus, many carriers will selectively reduce expenditures during the coming year, a trend which is expected to accelerate during 1988, as Table 1 suggests.

In setting priorities, management will emphasize those expenditures which best position a carrier to compete for lucrative business customers and which put their companies in a position to take advantage of demand for new, data-oriented services, from the home or the workplace. Digital switching technology, sophisticated transmission technologies, particularly fiber optic technology, and the underlying computer capability necessary to operate efficiently in today's environment will be given high priorities by cost-conscious managers in 1987. Other expenditures will be looked upon more skeptically.

Led by the RHCs, top management in the carrier industry will attempt to perfect a delicate balancing act: to increase capability geometrically while reducing expenditures arithmetically. Theirs will be a high-wire act in a glamorous business big top.

Should they succeed, they will be bathed in the market's applause and refreshed by ample bottom lines. Should their efforts be unsuccessful, they are likely to bathe in red ink and hear the galling sound of the market applauding some other managerial team. And the market tends to punish managers it doesn't applaud.

Technology makes success possible. But in an increasingly sophisticated, competitive and centralized industry, it is the ability of management to perform at the highest level it is capable of which determines a company's future.

The technology is there. It works and it is in demand. In 1987, the pressure will be on LECs and IXCs, particularly on their top managers, to put that technology to work to meet that demand profitably. □

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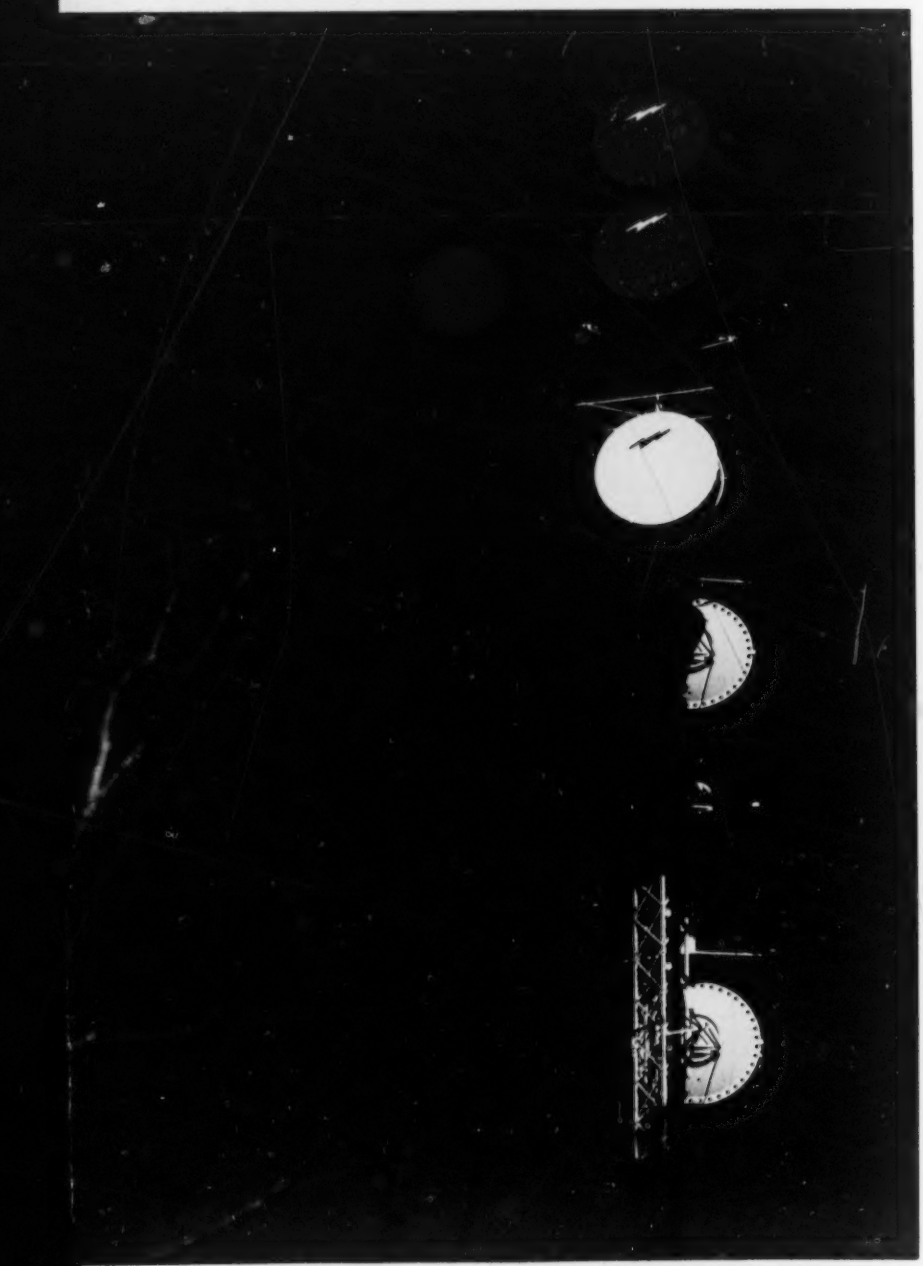

A LOOK AT THE LATEST IN MICROWAVE TECHNOLOGY

DOJ pushes freedom for RHCs

Red ink flows for AT&T, MCI

AT&T cuts private line rates

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FEBRUARY 9, 1987

TOP HEADLINES

DOJ recommends RHC freedom 12

WASHINGTON NEWS

DOJ advice angers many factions 17

Capitol Hill rushes tax time table 17

AT&T whittles at private line rates 20

NEWS OF THE WEEK

Red ink flowed in '86 28

Ericsson execs upbeat about '87 28

Venture offers multinational lines 28

AS WE SEE IT

Fowler's Last Round-Up
FCC Commissioner Mark Fowler blazed a deregulation trail in uncharted land, but his successor will find plenty of untamed territory 35

DEPARTMENTS

Advertisers' Index 113

Helpful Literature 114

Meetings 11

Moving Around Industry 97

New Products and Services 82

News of the Week 28

Plant Man's Notebook 80

Top Headlines 12

Washington News 17

MICROWAVE TECHNOLOGY

New Marking Options for Microwave Towers
By Donald J. Rowe. Maintenance and service costs can be greatly reduced using an FAA-recommended omnidirectional obstruction light . . . 36

Microwave Solves Networking Problems
By Jeffrey A. Akers. Studies prove the growing acceptance of microwave as a cost containment strategy 42

OPERATIONS

How to Identify Problem Ports
By Peter Rizik. Analysis of voice-quality data should be a combination of subjective test data and objective information 49

STATE REGULATION

Late Payment Charges
By Kim Robert Scovill. Many telcos are using late payment charges to encourage prompt payment and defray additional collection costs 52

INTEREXCHANGE CARRIERS

US Sprint—A Six-Month Report
By Ellis Booker. How is the newest long-distance giant doing? 60

REPORT

OFC '87 Looks at the Local Loop
By Sandra Williamson. Attendees from the world over flocked to the Optical Fiber Communications Conference 68

OPASTCO's Keen Eye Zeros In
By Susan Ubis. Small-telco representatives banded together to discuss strategies to ensure their future 74

BICSI On the Move
By Lloyd F. (Frank) Brisk. The 15th annual Building Industry Consulting Service International conference provided many formal and informal opportunities for learning 76

Late Payment Charges

A Survey of State Policies

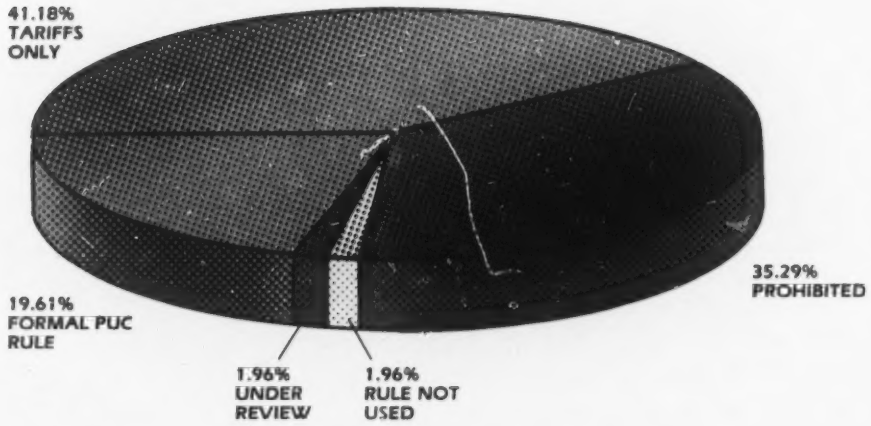

FIGURE 1 SUMMARY OF LPC RULES NATIONWIDE

KIM ROBERT SCOVILL

A LATE payment charge is a fee added to a delinquent subscriber's telephone bill to encourage prompt payment or to defray additional collection costs.

A survey initiated last September by Cincinnati Bell Telephone Co. compiled the status of state regulatory commission or LEC policies regarding LPCs. Fifty states and the District of Columbia were sampled and all responded. Many states were asked to verify the evaluation of their state's policy. Some telephone interviews also were conducted.

The study revealed that a slight majority of jurisdictions have either a formal rule giving regulatory sanction to LPCs, or LECs include such a policy in their tariff filings (Figure 1). In Arkansas, the state commission allows LPCs, but no telco currently applies the policy. A significant minority of states expressly prohibit the practice. Delaware and Kansas have the issue under investigation.

Most regulatory jurisdictions which prohibit LPCs are east of the Mississippi (Figure 2). The majority of these are in the Northeast. Organized by regions, the number of jurisdictions which allow or deny LPCs are outlined in Figure 3.

LPCs can vary from a percentage of the total bill to a flat fee—or some combination of both. They often appear as part of the total balance on the next bill. Of those states that have an LPC, most use 1.5% of the past due balance as the standard.

The remaining states that use percentages vary this amount from a low of 1% (North Carolina and Hawaii) to a high of 10% (Kentucky and Oklahoma). The second most popular form of LPC is a flat fee. Five states allow rates to vary among different companies within their jurisdictions (Kentucky, New Mexico, Oklahoma, Utah and Virginia).

An interesting new approach to the

Continued on page 56

Kim Robert Scovill is a Staff Supervisor, External Affairs Division of Cincinnati Bell Telephone Co.

late payment question is being tried by Anchorage Telephone Utility, which last September proposed a tariff with a two-tier LPC. The tariff combined a one-time LPC, followed by a finance charge. A one-time charge of $6.15 is based on the actual administrative cost to the telco for sending out the late payment notices. A finance charge of 10.5% each year on the delinquent amount represents Anchorage Telephone Utility's cost of capital as set by the Alaska regulatory commission.

Almost 50% of the 32 states that allow LPCs apply them if a customer's bill remains unpaid at its due date. A smaller number of these states delay application until the next month's bill is readied. At the extreme, Hawaii delays the LPC until a past due bill is more than 60 days old.

As a general rule, if a late payment charge applies, it encompasses the customer's entire bill. Most states with LPCs follow this approach. Indiana, Maine, Oklahoma, South Dakota and Texas apply LPCs to local service and intrastate toll, but not to interstate toll. Pennsylvania applies its LPC only to local service charges.

Most states with an LPC policy do not have a minimum billing policy. Of those states' telcos that deduct a minimum balance, a deduction between $10 and $20 is typical. However, the minimum balance runs as high as $99, as it is in West Virginia.

LPCs appear to be a relatively recent development for telcos. Of the 32 states with LPCs, our survey contained starting dates for 21. The earliest enacted policy is North Carolina's, which was initiated in November 1972.

However, no telco filed a tariff under the North Carolina rule until 1983. Most states or telcos with LPC policies did not enact them until after 1983. Two were enacted that year, three in 1984, four in 1985, and five policies became effective before November 1986.

In summary, LECs are aware that good credit management is more than just good business: It keeps common costs down to the benefit of all customers. LPCs are now a fact of life in 60% of the states, and are one part of this credit management strategy. □

FIGURE 2 LPC RULES BY STATE

Alabama	Y 2	Montana	N
Alaska	Y 2	Nebraska	Y 1
Arizona	Y 2	Nevada	Y 2
Arkansas	Y NC	New Hampshire	N
California	Y 2	New Jersey	N
Colorado	N	New Mexico	Y 2
Connecticut	N	New York	Y 2
Delaware	I	North Carolina	Y 1
Dist. of Columbia	N	North Dakota	Y 2
Florida	Y 2	Ohio	Y 2
Georgia	N	Oklahoma	Y 2
Hawaii	Y 2	Oregon	Y 1
Idaho	N	Pennsylvania	Y 1
Illinois	Y 2	Rhode Island	N
Indiana	Y 1	South Carolina	Y 1
Iowa	Y 1	South Dakota	Y 2
Kansas	N/I	Tennessee	N
Kentucky	Y 2	Texas	Y 2
Louisiana	Y 1	Utah	Y 2
Maine	Y 1	Vermont	N
Maryland	N	Virginia	Y 2
Massachusetts	N	Washington	N
Michigan	N	West Virginia	Y 2
Minnesota	Y 2	Wisconsin	N
Mississippi	N	Wyoming	Y 2
Missouri	Y 1		

Y 1 = Formal PUC rule exists allowing late payment charges
Y 2 = Late payment charge policy in company tariffs only
I = Issue under investigation
Y NC = Formal PUC rule exists, but no company currently charges
N = No company may charge for late payment

FIGURE 3 REGIONS WITH LPC RULES

	Allow	Deny	Investigating	Total
Northeast	3	7	1	11*
South	9	3	0	12
Midwest	9	2	1	12
Mountain	3	3	0	6
Southwest	4	0	0	4
Pacific	5	1	0	6
TOTALS	**33**	**16**	**2**	**51**

* (Includes the District of Columbia)

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FEBRUARY 23, 1987

TOP HEADLINES

Fowler plan expands lifeline 13

Canada sells Teleglobe 13

Fire knocks out Brooklyn lines 13

WASHINGTON NEWS

U.S. backs Burch for INTELSAT spot 16

Joint board puts SLC on hold 16

Last access tariffs approved 16

NEWS OF THE WEEK

Weiss blasts IXC restrictions 22

Eastern Showcase racks up numbers 22

AT&T plunges into ISDN waters 22

AS WE SEE IT

Is Japan Really a Villain?
Though there are legitimate grievances about Japan's government, not all of its success is the result of double-dealing and intransigence 35

DEPARTMENTS

Advertiser's Index 97

Meetings 11

Merits and Milestones 98

Moving Around Industry 78

New Products and Services 67

News of the Week 30

Plant Man's Notebook 66

Top Headlines 13

Washington News 16

REVIEW AND FORECAST/WORLD

World Telecom Spending Stagnant
By Larry Lannon and Czatdana Inan. While world spending will increase in 1987, the growth rate will decline, though it won't be as sharp as in recent years 36

Telecom Voices From Around the Globe
Industry executives from PTTs worldwide evaluate 1986 and look into their crystal balls to see what 1987 will bring 46

Times Are Changing
By John Williamson. Liberalization and deregulation made great strides in Europe last year. The new year should bring the first steps toward a unified telecom market 60

REPORT/MIDDLE EAST

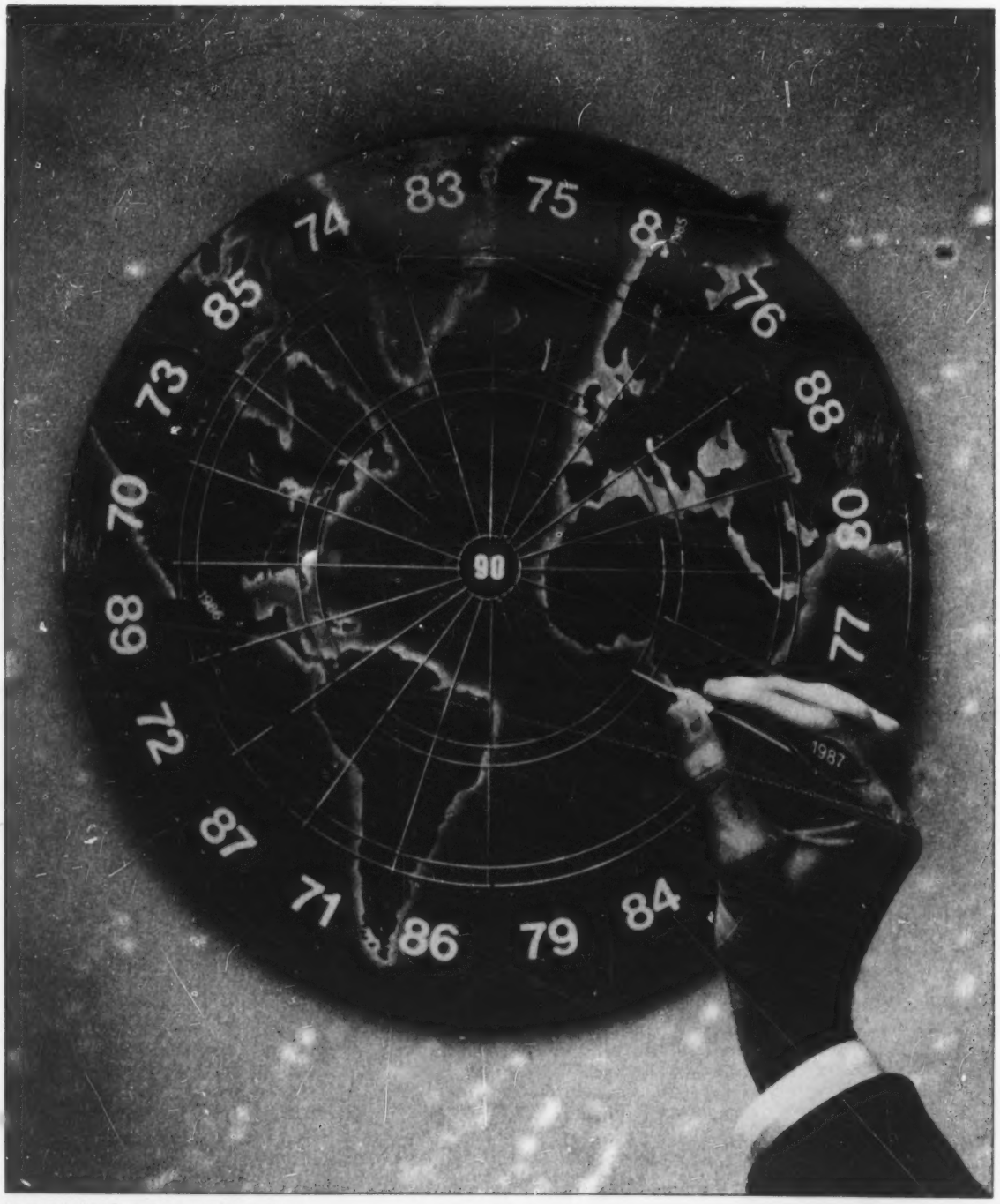
MECOM Attracts Quality, Not Quantity
By John Williamson. Though the number of visitors was on the low side last month in Bahrain, those who attended found their time well-spent . . . 62

REPORT/PACIFIC BASIN

Tsuruta Seeks to Bridge the Pacific
By Leo Anderson. PTC's 1987 goal will be to build understanding among telecom people on both sides of the Pacific 64

Targeting world telecom spending

It Will Be Stagnant in '87



Cover art by Mike Zimmerman; design by Jim Colao

LARRY LANNON, EDITOR, AND CZATDANA INAN, MARKET RESEARCH DIRECTOR

WORLD telecommunications spending in 1987 will plod along at the drowsy pace it has set throughout the mid-1980s.

World spending continues to increase, but the rate of growth is expected to decline in 1987, though the decline will not be as sharp as during the 1984-85 period.

World spending in current U.S. dollars will hit $90.27 billion in 1987, up from the 1986 level of $87.418 billion. Spending in 1985 was $75.76 billion.

All the figures for this story are based on research done for "World Telecom Spending, 1986-87," this year's version of an annual report by the Telephony Market Research Department.

Real growth during 1987 is projected at 6.3%. Real growth last year was 6.6%. The projected decrease in the rate of real growth is 0.3%.

This is not the first time the rate of real growth has dropped this decade. In 1984, the rate of real growth plummeted by 5.7%. It dropped by a more modest 3% in 1985. Last year, the rate of real growth increased by 1.2%.

It remains to be seen whether the decrease in the rate of real growth projected for 1987 will reflect merely continued sluggishness in telecommunications spending or mark the beginning of a prolonged period of progressively slower growth.

Our measurements of world spending are based upon information supplied by national telecommunications administrations. Table 1 provides a detailed breakdown of national spending data for selected countries around the world. It should be noted that information from Soviet Bloc countries and the People's Republic of China is difficult to obtain. Consequently, this story will focus on spending patterns in the rest of the world.

International spending studies of necessity relegate national circumstances to a secondary role. This tendency is unfortunate, since national telecommunications administrations determine the character of telecommunications throughout most of the world, and national administrations are the products of specific national circumstances, needs and pressures. Each is significantly different from every other.

Though the telecommunications industry is truly international in scope and character, most telecommunications users obtain levels of service determined by purely national factors, a reality which can be obscured when international spending patterns are being analyzed.

As Table 1 illustrates, despite manifold differences among countries, at least one generalization remains obviously true. The industrial powers continue to spend far more on their telecommunications systems than other countries, and consequently benefit from much more sophisticated telecommunications networks.

The gap between those relatively few countries with sophisticated telecommunications networks and those which must labor in a highly competitive world economy handicapped by inadequate telecommunications networks has been much discussed in the past few years, particularly by officials at the International Telecommunication Union.

The extent to which world telecommunications spending continues to be dominated by a small group of industrialized countries is illustrated in Table 2. Twelve countries will spend more than $1 billion on telecommunications in 1987. Seven of the 12 are European countries. They are, in order, West Germany, which will spend $7.14 billion in 1987; France, which will spend $4.85 billion; the United Kingdom, $2.94 billion; Italy, $2.85 billion; Spain, $1.98 billion; Switzerland, $1.24 billion; and Sweden, $1.14 billion.

Three of the Big 12 countries are Pacific nations. They are, in order, Japan, which will spend $8.9 billion; South Korea, $1.47 billion; and Australia, $1.04 billion.

Two of the Big 12 are North American countries which have borders on both the Pacific and Atlantic Oceans. They are the United States, which will spend $24.52 billion in 1987, and Canada, which will spend $2.11 billion.

The importance of the Big 12 to the world telecommunications market cannot be overestimated. As a group, the 12 biggest spenders will spend 66.4% of the total amount spent on telecommunications equipment this year. The entire rest of the world will account for only one-third of all telecommunications expenditures. The rest of the world—a group which includes smaller but highly industrialized nations such as the Netherlands and Taiwan—will spend a total of $30.09 billion less than the Big 12.

In other words, the United States, France and Australia will spend more money on telecommunications in 1987 than the rest of the world combined, if the nine other members of the Big 12, the Soviet Bloc countries and China are excluded. By itself, the United States will account for 27% of world telecommunications spending in 1987.

The Bedrock

A cursory examination of Table 2 demonstrates the continuing importance of Europe to the international telecommunications industry. The seven European members of the Big 12 will spend $22.14 billion in 1987. The three Pacific nations in the group will spend $11.41 billion in 1987, or roughly half the amount the seven European members will spend on telecommunications. The two North American members of the Big 12 will spend $26.63 billion on telecommunications in 1987.

Of the three geographic classifications into which members of the Big 12 fall, the group with the fewest members will spend the largest amount of money this year. Both North American countries are also

conveniently located between the two world's major commercial oceans and between the European and Pacific nations, at least insofar as traffic traveling through the Western Hemisphere is concerned.

The Pacific may be the most dynamic economic region in the world today. The regional dynamism of the Pacific is reflected in the growing strength of the national telecommunications industries of Japan, Australia, South Korea and Singapore. But for the moment at least, the Pacific must rank behind Europe and North America in terms of its importance to the international telecommunications industry.

None of the Big 12 nations is located in Africa or South America, and only one, South Korea, is on the Asian mainland. No Middle Eastern country is among the Big 12, either.

Of course, many countries in the developing world continue to strive to upgrade their telecommunications networks. Brazil, for instance, will spend a projected $889 million in 1987, up from the estimated $850 million it spent last year, an increase of 3.5%. South Africa, despite its well publicized social and political problems and the recent tendency for those problems to sap its economic vitality, will spend $599.2 million in 1987, down 5.6% from the $634.7 million it spent on telecommunications last year. Zambia, which spent $37 million in 1986, will slash its telecommunications expenditures $14.4 million, or 39%, to $22.6 million in 1987.

In the Caribbean, Barbados, which spent $8.5 million in 1986, will increase its telecommunications expenditures by $1.5 million, or 17.6%, to $10 million this year. Jamaica projects an increase of $5 million, or 25%, from $20 million last year to $25 million in 1987. On the other hand, Trinidad and Tobago will prune a whopping $34.3 million from 1986 expenditures of $67.3 million to projected 1987 expenditures of $33 million, a 51% reduction. Bermuda will follow a comparable course, cutting 1986 expenditures of $8 million by $4.1 million to the projected 1987 level of $3.9 million, a decrease of 51.3%.

Despite the economic crisis which continues to vex all Latin America

TABLE 1 1985-1987 WORLD CONSTRUCTION EXPENDITURES ($000,000)

	IN CURRENT US$[a]		
	1985	1986	1987[b]
ZONE 1: NORTH AMERICA			
United States			
Regionals	14,743.6	14,366.8	14,422.8
Independents	5,309.9	5,625.8	5,714.0
Interexchange	4,320.9	4,552.1	4,386.0
Canada			
Bell Canada[c]	997.7	1,081.1	1,284.4
Other Telecom Canada	783.4	820.4*	827.6*
Barbados	11.6	8.5	10.0
Bermuda	6.6	8.0	3.9
Jamaica	20.0	20.0	25.0
Trinidad & Tobago	67.7	67.3	33.0
Subtotal	26,261.4	26,550.1	26,706.7
Extrapolated:			
Current US$	27,643.6	27,947.5	28,122.3
Constant (1983) US$[d]	25,024.9	25,900.8	26,807.3
ZONE 2: AFRICA			
Kenya	4.4	10.5	11.6
South Africa	593.8	634.7	599.2
Zambia	38.6	37.0	22.6
Zimbabwe	44.6	51.4	47.6
Subtotal	681.4	733.6	681.0
Extrapolated:			
Current US$	1,362.8	1,467.2	1,362.0
Constant (1983) US$	2,102.8	2,176.4	2,252.6
ZONE 3-4: EUROPE			
Austria	577.8	723.8	765.1
Belgium	369.9	514.9	492.6
Denmark			
Jydsk	71.9	134.3	141.8
KTAS	90.0	139.0*	158.0*
Finland			
Association	152.5	216.9	236.6
PTT	111.2	157.7	177.4
France	3,786.6	4,750.5	4,853.0
Germany, West	4,660.9	6,705.2	7,141.5
Italy	2,289.0	2,782.4*	2,850.0*
Netherlands	390.2	578.7	575.9
Norway	416.7	506.9	556.9
Portugal			
TLP	73.8	101.5	111.5
Spain	1,105.3	1,494.1	1,981.4
Sweden	624.9	903.6	1,140.0
Switzerland	880.6	1,254.2	1,243.7
United Kingdom	2,559.8	3,032.3	2,935.4
Subtotal	17,861.1	23,996.0	25,334.8
Extrapolated:			
Current US$	21,013.1	28,230.6	29,805.6
Constant (1983) US$	24,236.5	25,084.7	25,962.7
ZONE 5: SOUTH & CENTRAL[aa] AMERICA			
Brazil	850.0	850.0*	875.0*
Costa Rica	19.1	23.4	26.1
Chile	19.1	39.5	117.9
Colombia	11.8	13.8	58.1[bb]
Mexico	523.2	455.1	772.3
Peru	16.6	28.2	80.0
Uruguay	12.8	59.3	87.4
Venezuela	113.3	315.2	369.6
Subtotal	1,565.9	1,784.5	2,386.4
Extrapolated:			
Current US$	2,237.0	2,549.3	3,409.1
Constant (1983) US$	2,730.6	2,826.2	2,925.1

ZONE 6: PACIFIC			
Australia	975.5	1,043.3	1,042.0
Indonesia	249.3	656.9	727.4
New Zealand	232.3	300.6	327.9
Singapore	196.7	189.2	170.9
Thailand	192.2	218.3	346.3
Philippines	62.0	95.8[aa]	79.0[aa]
Subtotal	1,908.0	2,504.1	2,693.5
Extrapolated:			
Current US$	2,385.0	3,130.1	3,366.9
Constant (1983) US$	2,995.8	3,100.7	3,209.2
ZONE 7: USSR[c]			
Current US$	6,448.0*	6,705.5*	6,974.1*
Constant (1983) US$	6,427.4	6,652.3	6,885.1
ZONE 8: FAR EAST			
Hong Kong	76.8	121.5	109.4
Japan	6,961.0	9,388.9[e]	8,900.0*
Korea, Rep.	1,339.3	1,399.0	1,469.6
Taiwan	467.7	514.2	797.6
Subtotal	8,844.8	11,423.5	11,276.6
Extrapolated:			
Current US$	11,056.0	14,279.4	14,095.8
Constant (1983) US$	12,247.3	12,675.9	13,119.6
ZONE 9: MIDDLE EAST			
India	587.9	643.8	620.9
Kuwait	177.2	96.0*	102.7*
Oman	192.0	81.0	85.0*
Israel	278.1	267.1[aa]	293.2[aa]
Subtotal	1,235.2	1,087.9	1,101.8
Extrapolated:			
Current US$	3,529.1	3,108.3	3,148.0
Constant (1983) US$	3,487.0	3,609.1	3,735.4
GRAND TOTAL			
Identified Countries	64,805.8	74,785.2	77,154.9
Extrapolated:			
Current US$	75,674.6	87,417.9	90,273.8
Constant (1983) US$	79,252.3	82,026.1	84,897.0
GROWTH in Current US$ versus Constant (1983) US$	−4.5%	+6.6%	+6.3%

Source: Telephony, a division of Intertec Publishing Corp.
* estimated by Telephony
a: at average annual exchange rates of U.S. Federal Reserve System and the International Monetary Fund
aa: average annual rate November 1986
b: at 1986 average annual exchange rates
bb: based on 1986 report; subsequent attempts to verify were unsuccessful
c: Bell Canada is part of Telecom Canada companies
d: assumes 3.5% average inflation during 1983-87 (U.S. GNP deflator)
e: assumes addition of 3 million lines annually during 1986-90 five-year plan, which sets telecommunications as "key" objective
f: reflects drop in average annual exchange rate of 238.47 yen = US$1 to 168.35 in 1986

TABLE 2 TOP 12 COUNTRIES (EXPENDITURES IN 1987 TO EXCEED $1 BILLION)

Rank	Country	1987 Expenditures (US$000,000)	1986 Expenditures (US$000,000)	Increase (Decrease)	(%)
1.	U.S.	24,522.8	24,544.7	(22.4)	(0.1)
2.	Japan	8,900.0	9,388.9	(488.9)	(5.2)
3.	W. Germany	7,141.5	6,705.2	436.3	(6.5)
4.	France	4,853.0	4,750.5	102.5	(2.2)
5.	U.K.	2,935.4	3,032.3	(96.9)	(3.2)
6.	Italy	2,850.0	2,782.4	67.6	(2.4)
7.	Canada	2,112.0	1,901.5	210.5	(11.1)
8.	Spain	1,981.4	1,494.1	487.3	(32.6)
9.	S. Korea	1,469.6	1,399.0	70.6	(5.0)
10.	Switzerland	1,243.7	1,254.2	(10.5)	(0.8)
11.	Sweden	1,140.0	903.6	210.4	23.3
12.	Australia	1,042.0	1,043.3	(1.3)	(0.1)

and the acute political tension which grips the Central American isthmus, Costa Rica plans to spend $26.1 million on telecommunications in 1987, up $2.7 million, or 11.5%, from the $23.4 million spent last year.

Some South American countries are reporting extremely ambitious telecommunications spending plans, despite the concurrent economic, social and political crises with which many, particularly in the northern part of the continent, must contend. For example, Peru reported plans to spend $80 million on telecommunications in 1987, compared to the $28.2 million it spent last year. To meet its goal for 1987 spending, Peru must increase telecommunications spending by a robust $51.2 million, or 184%.

But Peru's plans are modest compared to Colombia's goal of increasing its telecommunications expenditures by $44.3 million in 1987. Since Colombia spent $13.8 million in 1986, if its plans are to be realized, it must spend $58.1 million in 1987, a spectacular 321% increase. Chile, on the other end of the continent but like Colombia troubled by political conflict, indicates that it plans to increase its telecommunications spending by $77.5 million in 1987, a 196% increase from $39.5 million in 1986 to $117.9 million this year.

Not all South American countries are laying such monumental plans. Uruguay, one of the politically most stable countries on the continent, spent $59.3 million in 1986. It plans to boost its telecommunications spending by 47.4%, or $28.1 million this year to $87.4 million.

In the Pacific, Singapore will cut its spending by 9.7%, from $189.2 million in 1986 to $170.9 million in 1987. The Philippines will spend $79 million in 1987, down $16.8 million, or 17.5%, from the $95.8 million it spent in 1986. Hong Kong also will reduce its spending. After spending $121.5 million in 1986, it will spend $109.4 million in 1987, a reduction of $12.1 million, or 11%.

In the Middle East, Oman will increase its expenditures by $4 million, or 4.9%, from $81 million in 1986 to $85 million in 1987. Kuwait will increase its spending by $6.7 million, or 7%, from $96 million in 1986 to $102.7 million in 1987. Israel's

spending will go from $267.1 million in 1986 to $293.2 million in 1987, an increase of $26.1 million, or 9.8%.

One comparison may serve to graphically illustrate the differing priorities nations give to telecommunications and the gap between poor and competitive nations. India is the third most populous country in the world. Within itself, it contains many of the social and economic extremes which confront much of the world. India possesses a significant industrial base and a large number of highly educated professionals. But it remains a largely agricultural country with many uneducated, illiterate people to support. Taiwan is emblematic of the up and coming, industrialized Pacific nations. Taiwan also is much smaller than India, both in terms of territory and population.

In 1986, Taiwan spent $514.2 million on telecommunications equipment. India spent $643.8 million on telecommunications last year. In 1987, Taiwan plans to increase its telecommunications expenditures by $283.4 million, or 55.1%, to $797.6 million. India, on the other hand, will reduce its expenditures by $22.9 million, or 3.6%, to $620.9 million. Despite the difference in the size of the two Asian industrial powers, India will spend less on telecommunications in 1987 than Taiwan.

If sophisticated telecommunications networks are essential to constructing competitive national economies, can countries like India or Taiwan look forward with greater confidence to competing in the world economy of the 1990s? To ask the question is to answer it.

Table 3 reviews the 10 top growth budgets among countries which plan to spend more than $100 million per year and whose plans do not call for increases of more than 100% per annum, as do Colombia's and Chile's, for instance.

Three European countries are listed in Table 3. Spain, with a projected growth rate of 32.6%, ranks fourth. Sweden ranks fifth with a projected growth rate of 23.3%. Finland's projected growth rate of 10.4% ranks ninth.

Two Latin American and one North American country also are listed among the top 10 in terms of growth. Mexico ranks first with a projected growth rate of 69.7%. Venezuela ranks sixth with a projected growth rate of 17.3%. Canada ranks seventh with a projected growth rate of 11.1%.

TABLE 3 TOP 10 GROWTH BUDGETS, 1986-87 (MORE THAN $100 MILLION/YEAR)

Rank	Country	1987 Expenditures (US$000,000)	1986 Expenditures (US$000,000)	Increase	(%)
1.	Mexico	455.1	772.3[a]	317.2	(69.7)
2.	Thailand	218.3	346.3	128.0	(58.6)
3.	Taiwan	514.2	797.6	283.4	(55.1)
4.	Spain	1494.2	1981.4	487.2	(32.6)
5.	Sweden	903.6	1114.0	210.4	(23.3)
6.	Venezuela	315.2	369.6	54.4	(17.3)
7.	Canada	1901.5	2112.0	210.5	(11.1)
8.	Indonesia	656.9	727.4	70.5	(10.7)
9.	Finland	374.6	414.0	39.4	(10.5)
10.	New Zealand	300.6	327.9	27.3	(9.1)

a: Calculated at November 1986 average exchange rate

Four Pacific countries round out the list. Thailand ranks second with a projected growth rate of 58.6%. Taiwan's 55.1% projected growth rate ranks it third in the top 10. Ranked in the eighth spot is Indonesia, which projects a growth rate of 10.7%. New Zealand, with a projected growth rate of 9.1%, ranks tenth.

Three of the top 10 growth countries are from parts of the world which do not usually attract the telecommunications limelight. Thailand is from the Asian mainland. Venezuela is from the South American mainland and Mexico forms the largest part of the isthmus connecting North America and South America.

Two additional points are noteworthy about Table 3. First, only three countries—Spain, Sweden and Canada—appear both among the 10 leading growth countries and the 12 largest spenders. This fact may reflect the stability and maturity of the most industrialized countries, which dominate the 12 largest spenders list, as much as the relative dynamism of the other countries, which dominate the list of 10 leading growth countries.

Second, among the 10 leading growth countries, six border the Pacific Ocean (the four Pacific nations, Canada and Mexico). Assuming the ambitious plans sketched out by some of the countries on the top of the growth list can be realized, Table 3 may suggest a geography for further telecommunications development in the future.

Table 2 demonstrates a trend which buttresses the suggestion that the Pacific Rim will fuel growth in telecommunications spending in the future. Five of the 12 countries which will spend more than $1 billion in 1987 on telecommunications actually will decrease spending from 1986 levels. They are the U.S., Japan, the U.K., Switzerland and Australia.

The U.S. and Australia will reduce their spending by the smallest of amounts (0.1%), so their spending habits are basically unchanged since 1986.

Two of the other three countries are European. Both the U.K. and Switzerland, of course, have mature economies. Japan's sharp decline in spending—5.2%—may reflect its transition from a monopoly to a liberalized market more than a slowing in economic growth and, consequently, in the growth in telecommunications demand. NTT probably is retrenching as it prepares to enter a much more competitive period.

Five of the Big 12 countries border the Pacific. Australia and the U.S. have reported only the smallest declines in telecommunications spending. Japan has reported a sharp decline, but one that seems related to transitions within its telecommunications industry rather than its national economy. Canada reports a robust growth rate of 11.1% in spending. South Korea continues to steadily increase its telecommunications spending, this year by 5%.

Five of the seven European members of the Big 12 plan to increase their telecommunications spending in 1987. West Germany will spend 6.5% more this year than it did last, a steady growth rate. France and Italy report modest growth, 2.2% and

Continued on page 44

2.4%, respectively. Sweden and Spain report very significant growth rates. Sweden plans to increase telecommunications spending by 23.3% and Spain by an even greater amount, 32.6%.

Short-term growth rates among the big spenders suggest that the more mature telecommunications networks are not entering a period of rapid absolute growth but are redirecting their efforts to diversify the types and increase the volumes of the traffic they carry.

In some countries, particularly Japan and the U.K., this shift is related to liberalization policies which loosen the hold of monopolies upon national markets. Liberalization compels newly competitive organizations, like British Telecom in the U.K. and NTT in Japan, to anticipate and respond to rapidly changing demands and puts their revenues at risk for the first time. Both those factors come into play in the business market, the market liberalization not coincidentally is designed to benefit the most.

For instance, Figure 1 shows the distribution of NTT's revenues in 1986 among the various kinds of services it offers. Telephone services clearly remain dominant. However, the figure also identifies eight other services which contribute to NTT's revenue stream. In addition, basic business service is included among the telephone services. Business telephone service and the other non-telephone services shown in Figure 1 are subject to competition under Japan's liberalization policy and, thus, at risk.

Table 4 suggests how important the newer types of services are to NTT's growth. Note that growth in the number of telephone lines, while steady, hovers at 3.6%, far from a spectacular rate. Growth in some of the newer services which will appeal primarily to businesses is much higher. For instance, NTT anticipates that the number of facsimile service subscribers will grow by 154% during the 1985-87 period. Subscriber growth during this two-year period in videoconferencing is expected to be 112.5%; in high-speed data, 59.1%; and in mobile service, 53.8%.

High-risk markets are growth markets in countries pursuing a policy of liberalization. NTT can be expected to shift its investment to those markets to reflect the changed conditions prevalent in Japan. Other organizations placed in similar positions can be expected to do the same.

The extent to which this pattern becomes a global pattern depends on the extent to which the industrialized countries which have state-operated telecommunications monopolies adopt liberalization policies. In 1986, liberalization seemed to be a wave of inexorable power fated to wash over all industrialized countries. But the wave already may have crested and broken in much of the world.

The progress liberalization policies make during 1987 may determine whether open market principles attain more widespread influence or are confined largely to North America, Japan and the U.K., places where governments already are committed to them to one degree or another. □

FIGURE 1 20/80 RULES NTT'S REVENUES (BASE: $28.3 BILLION FISCAL 1986)

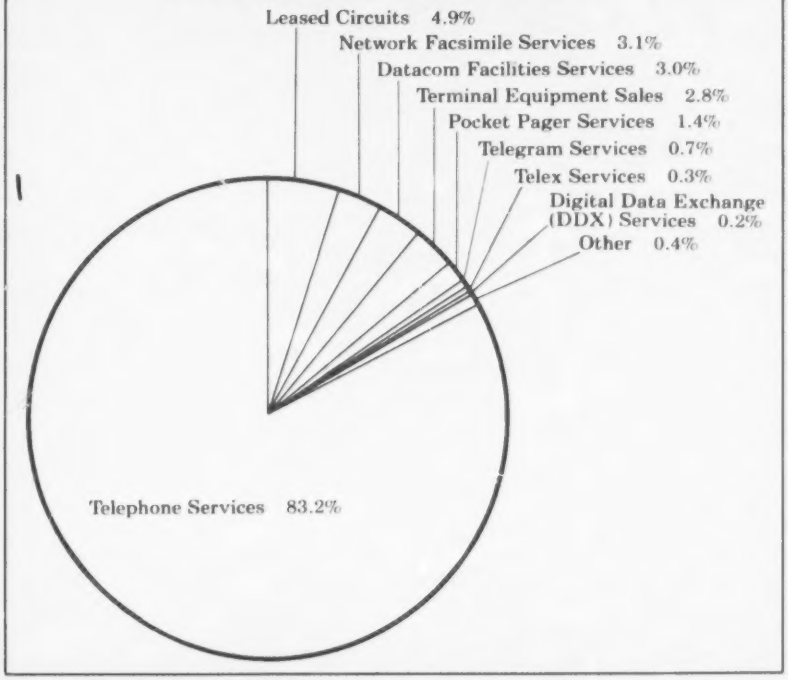


TABLE 4 NTT SUBSCRIBER AND LINE GROWTH FISCAL 1984-86

Lines	1986 Installed	% Growth 1983-1984	1984-1985	1985-1986
Telephone Access Lines	46,094,000	3.3%	3.6%	3.7%
Public Telephones	910,000	0.3	0.4	-2.7
Leased Circuits	473,000	5.6	5.5	7.2
DDX: Circuit Switched	3,687	107.1	67.8	37.7
Packet Switched Type 1[a]	12,039	296.7	120.4	81.7
Type 2[b]	1,715	—	—	—
High Speed Digital Circuits	1,778	—	—	114.7
Subscribers				
Pocket Pagers	2,156,000	15.2	14.6	14.3
Mobile Service	62,103	37.3	48.5	53.8
Facsimile	46,271	266.9	90.7	154.0
Telex	36,000	-12.8	-17.1	5.9
Videotex[b]	13,381	—	—	133.5
Videoconference	18	—	166.7	112.5
High Speed Digital Circuits	288	—	—	59.1

a: personal computer access introduced fiscal 1986
b: introduced November 1984

MAR

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Plessey exec: S-C soft on RHC link

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COVERING TELECOMMUNICATIONS SINCE 1901

MARCH 2, 1987

TOP HEADLINES

NARUC nixes higher SLC 13

Halprin follows Fowler's footsteps 13

WASHINGTON NEWS

Trade talks heat up on Hill 14

Dennis lauds DOJ recommendations 14

Congress aids RHC freedom 14

NEWS OF THE WEEK

Crews work to fix Brooklyn fire damage 23

Plessey exec nixes RHC joint venture 23

Mountain Bell kicks off fourth ISDN trial 23

AS WE SEE IT

Why Stop There?
The post-divestiture situation has evolved to the point where handicaps are no longer needed—let free competition determine the winners 27

DEPARTMENTS

Advertisers' Index 79

Meetings 11

Moving Around Industry 65

New Books/Audio-Visuals 80

New Products and Services 47

News of the Week 23

Plant Man's Notebook 46

Top Headlines 13

Washington News 14

Washington Pulse 44

DIGITAL PABX TECHNOLOGY

Voice-Data PABX Makes Data Analysis Easy
By Richard D. Creadon. System and training analyses require a top notch voice-data system. Siemens' Saturn II PABX fits the bill 28

PBX Decisionmaking: Features vs. Benefits
By Jon Schapiro and Narayan Subramanian. Choosing the right PBX requires a careful assessment of needs. Here's what to look for 36

REPORT

'Interoperability' Stressed at CN'87
By Ellis Booker. A record number of attendees at CN'87 listened as regulators debated how wide scale interoperability within the public switched network will affect regulatory policy 38

WASHINGTON PULSE

From Structural Separations to Safeguards
By Andrew Lipman. The FCC may have eliminated the CPE separate subsidiary requirements, but the prohibition on BOC manufacturing of CPE continues to haunt the telcos 44

TOPS

Continued from page 24

call completion through hotels and coin stations.

TOPS MP also will allow the caller to reach a person with an unpublished number. The operator would contact the unlisted party and deliver the caller's name and number. The unlisted party could then return the call. The calling party would be charged for this service.

Another new revenue producing service will be message delivery. If a line is busy, the caller may leave a message with the operator and the operator will deliver the message a specific time or call the number at regular intervals until the call is answered.

Northern Telecom has received approximately 70 TICS orders from Independent telcos, according to a company spokesman. Three RHCs also are "looking into" the system, he added. An unidentified BOC, is scheduled to trial the call completion feature in 1988.

International 800 firm sues AT&T

Worldwide 800 Services, a company which arranges international toll-free telephone service, is suing AT&T in U.S. District Court for allegedly making false advertising claims and taking anti-competitive action. Worldwide 800 Services is also filing complaints with the Federal Trade Commission and the Federal Communications Commission.

Worldwide 800 Services is a subsidiary of HITK Corp., a company headed by Chief Executive Officer Stanley B. Scheinman, who served as a senior vice president of MCI Communications during that company's antitrust lawsuit against AT&T.

In a Washington press conference announcing the legal action, Scheinman said AT&T ads for international 800 service incorrectly state that only AT&T can provide 800 service to international locations, and that AT&T can provide service on a city-to-city basis abroad. In addition, AT&T ads imply that the company has a presence in foreign cities where it actually only uses the local network, said Scheinman.

Through its subsidiary, Service 800, Worldwide 800 Services has provided international 800 service for the past 12 years, the company states. Its suit, filed in U.S. District Court in Illinois, charges AT&T with violations of U.S. and Illinois laws against deceptive practices and consumer fraud. Worldwide 800 Services seeks monetary damages, injunctive relief and a court order directing AT&T to place corrective advertising.

An AT&T spokesman said the company has not yet seen the lawsuit, but does not generally comment on legal actions.

Correction

The article "Carrier Spending Hits a $24 Billion Plateau" in the Jan. 12 issue of TELEPHONY contained a table which incorrectly stated that Southwestern Bell has 100,078 miles of installed fiber optic cable as of Dec. 31, 1986. The telco actually has 170,396 fiber miles installed as of that date.

Digitech alternate equal access unit shines in trial

Digitech Communications and Southwestern Bell successfully completed a field trial of the Digitech E-A-S 20/20, a system which permits telcos to convert No. 5 crossbar switches to equal access.

The trial opens the door for Digitech to aggressively market the E-A-S 20/20 as a short-term solution for Bell regional holding companies which are trying to meet equal access conversion deadlines. "We're going to sell as many as we can as fast as we can," said Digitech Communications President Wes Rogers. "After 1990 [the deadline for RHC equal access conversion] the market for these begins to dry up."

The primary RHC candidates for use of the E-A-S 20/20, in addition to Southwestern Bell, are Nynex, Pacific Bell and BellSouth, according to Rogers. Nynex had the lowest conversion rate at the Sept. 1, 1986, deadline for 75% equal access conversion. The remaining RHCs recently gave the Department of Justice revised schedules for converting non-conforming offices.

The system has been in development since April 1985. Its field trial, involving approximately 50 customers and three interexchange carriers, turned up only a few software glitches, which were ironed out, said Rogers. "There were no problems apparent to the users, and no switching or Digitech equipment failures. We lost no billing."

The E-A-S 20/20 will aid in reaching equal access goals by enabling telcos to convert No. 5 crossbar switches, saving both time and money, according to David Serra, manager of IXC business relations for Southwestern Bell.

Los Angeles County Transportation Commission

Long Beach-Los Angeles Rail Transit Project

Supervisory Control and Data Acquisition System

Notice is hereby given that the Los Angeles County Transportation Commission (LACTC) will receive proposals on April 17, 1987 at 2:00 p.m. for Contract No. R01-T07-H831 for Furnishing, Installing, and Testing, a Supervisory Control Data and Acquisition System including all applicable software, hardware, and interconnections to transmit and receive data between substations, passenger stations, rights-of-way, the transit radio system and the central control facility.

Proposal forms, instructions and contract documents may be examined and/or purchased at the LACTC Offices during the hours of 9:00 a.m. to 4:30 p.m. For purchase, a certified check or money order made payable to LACTC, or cash, is required. All requests for mailing of documents must be submitted to the LACTC before April 10, 1987 to insure timely delivery.

The LACTC hereby notifies all proposers that it will affirmatively insure than in any contract entered into pursuant to this advertisement, Disadvantaged and Women Business Enterprises will be aforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Bidder proposers are advised that this contract is subject to the provisions of the Work Continuation Agreement between the LACTC and LA County Building and Construction Trades Council (AFL-CIO) which requires payment of prevailing wages in compliance with an apprentice employment training program.

RFP Available: Beginning 2/16/87. **Preproposal Meeting**: 3/3/87 at 10 a.m. **Proposals Due**: 4/17/87 at 2 p.m. **Document Purchase Price** (non-refundable): Pick-up at Contract Administration counter: $150. Delivered by Overnight Mail: $175. **Address**: Los Angeles County Transportation Commission, 403 West 8th Street, Suite 500, Los Angeles, CA 90014. For RFP Purchase: Attn: Contracts Administration. For Proposal Delivery: Attn: Contracts Administration. For Preproposal Meeting: 7th Floor Conference Room.

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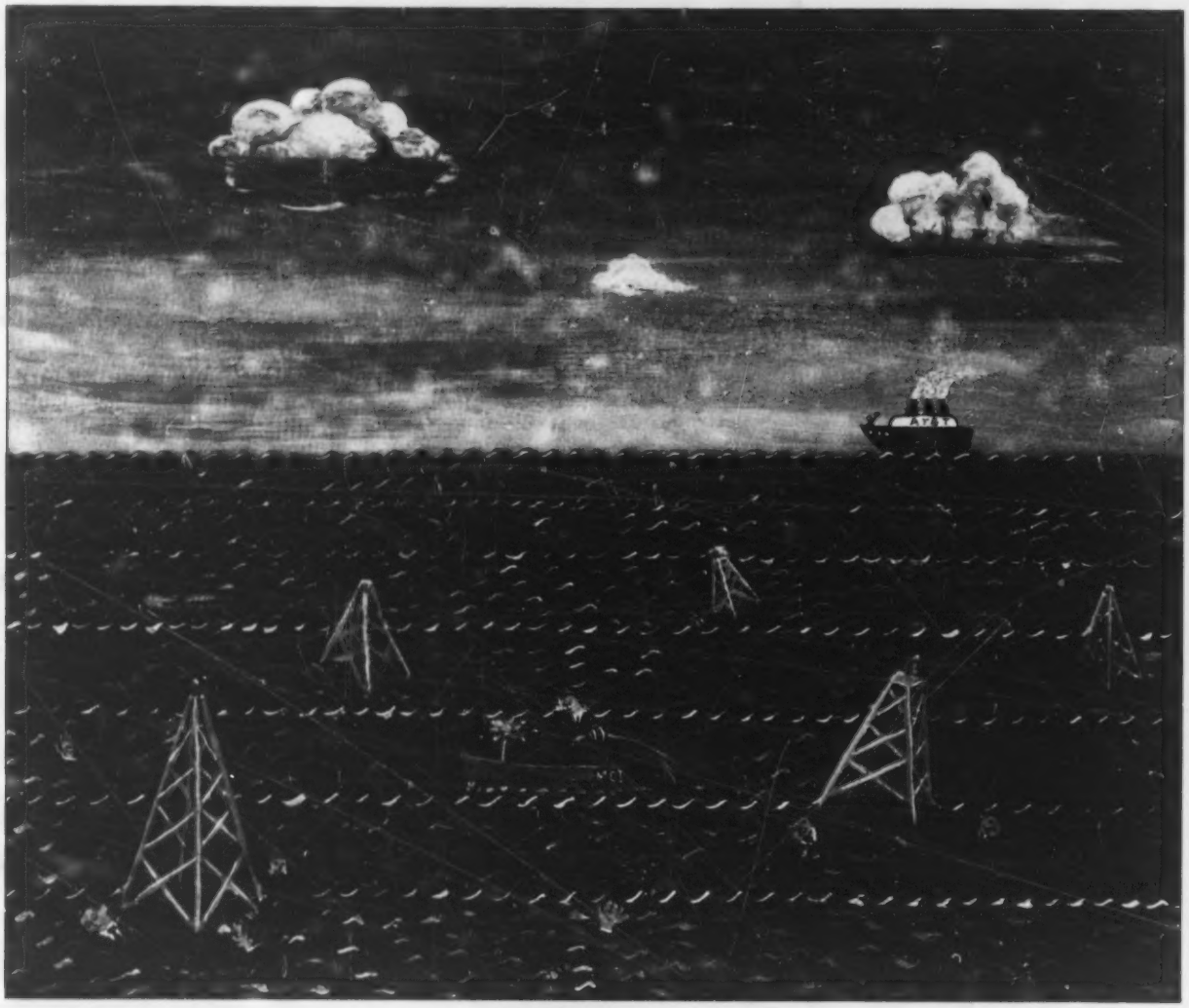

COVER

The IXCs: Struggling to Stay Afloat in Tough Times

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MARCH 9, 1987

TOP HEADLINES

Study fuels tax windfall battle 12

Bolger calms fears on overseas plans 12

WASHINGTON NEWS

Congress armed for trade battle 17

NARUC widens scope on MFJ concerns 17

NTCA applies breaks to SLC increase 17

NEWS OF THE WEEK

NTT prepares for competition 22

AT&T wins USPS contract 22

AS WE SEE IT

The Hope for Standards
Open network architecture is key to the development of competition. The user community will keep a close eye on how the industry hammers out the standard 29

DEPARTMENTS

Advertisers' Index 71

Helpful Literature 72

Meetings 11

Moving Around Industry 57

New Products and Services 51

News of the Week 22

Plant Man's Notebook 50

Top Headlines 12

Washington News 17

IXC REVIEW AND FORECAST

IXCs Navigate a Treacherous Sea
By Ellis Booker. As price differences between carriers begin to shrink, long-distance companies must find a new way to define their niche 30

TELCO BILLING

Verification Problems With Meet Point Billing
By Linda Myers. Small telcos cannot afford to wait for a bill to be verified before it is paid. A new billing plan could answer some questions . . . 36

REPORT

Eastern Showcase '87: One Step Closer to ISDN
Staff report. Conventioneers were bombarded with new information and new products while in Indianapolis 40

Strategic Challenges:

Interexchange Carriers Navigate A Treacherous Sea

ELLIS BOOKER, FEATURES EDITOR

SIGHTING trends in the interexchange industry is no easy task. A young and volatile industry, the post-divestiture IXC marketplace has been characterized by punishing price wars, mergers and acquisitions of companies both large and small and a spate of service introductions, ranging from WATS and 800 services to videoconferencing and overseas electronic mail.

If this environment has been tough on industry prognosticators, it has been brutal for the IXCs themselves. Most recently, fierce competition among the industry's three dominant players, AT&T Communications, MCI Communications Corp. and US Sprint Communications Co., made for a bloody 1986, and all three carriers entered 1987 announcing financial losses.

AT&T ended 1986 by cutting 27,400 jobs, closing some facilities and taking a $3.2 billion charge against fourth quarter earnings. MCI cut its own staffing 16%, took a $500 million write-down and did not achieve its anticipated market share. And although US Sprint has not made staff reductions, the carrier recently announced a $199.2 million pre-tax loss in the fourth quarter (TELEPHONY, Feb. 16, page 30).

The Top Three

AT&T, MCI and US Sprint face different strategic challenges in the coming year, according to Berge Ayvazian, director of telecommunications consulting at The Yankee Group, Boston. In particular, he cites their efforts to provide business customers with data network solutions.

"AT&T is going through a major overhaul of their tariffs, while at the same time trying to integrate the sales forces of information services and communications," Ayvazian says. But he notes that the company's efforts to offer enhanced network services and "usher in the next phase of ISDN," have not been as successful as hoped.

MCI also has had trouble offering enhanced network services and migrating former SBS satellite customers onto VNET, its virtual network service, Ayvazian says. The hands down winner in the virtual network services race has been US Sprint, he says. Sprint has claimed 150 customers for its virtual private network offering.

Ayvazian credits US Sprint's inroads into the corporate marketplace to its national accounts organization, which he suggests has done a good job at targeting applications for major accounts. "Like MCI, Sprint has realized that those national accounts will be a long-term source of income," he says.

However, beneath this roiling surface, some industrywide, strategic marketing trends are evident. The most obvious of these, confirmed in conversations with representatives from numerous carriers, is the shift away from a "price-only" sales strategy. Second, a number of companies, particularly those in the "second tier," are honing their sales organizations, finding ways to target potential customers and markets more precisely (Figure 2).

Analysts also agree that while AT&T, MCI and US Sprint play a game of follow-the-leader with price cuts and service introductions, the most interesting activity in the IXC marketplace is to be found among the second tier companies. For it is here, among these predominantly business-oriented carriers that the true battle for market share is being waged.

Features and Service

Without question, price differences between carriers continue to shrink. Asked to describe the price advantage between his newly announced WATS product and those of competitors, a Western Union official said, "it's equal to, it's just below . . . it's the skin of an onion."

Over the entire spectrum of IXCs, in fact, price advantage is being set in the context of network quality and ancillary services. "Over the last 12 to 18 months we have moved to a 'value position,'" reports William Maloney, vice president, sales and marketing at ALC Corp. Value, Maloney continues, is "an indistinguishable combination of price, service and quality."

With 1986 revenues of $500 million, ALC ranks a distant fourth in revenues behind AT&T, MCI and US Sprint (Figure 1). According to Maloney, the company has approximately 500,000 customers, about one-third of whom are commercial subscribers. Almost exclusively a voice carrier, Maloney says the com-

pany does not actively seek data customers.

While Maloney confirms that ALC will test both 800 NXX and operator assistance services later this year, as well as expand its international connections to 20 or 30 countries, he says the company is concentrating attention on improving its core business. And like several other IXCs, ALC is focusing on a mundane but critical aspect of its business: customer billing.

"We provide either paper or magnetic tapes with customized bills, as well as detailed account summaries," says Maloney, who adds that customers on dedicated facilities also receive post-sale support in the form of local customer support representatives who review bills, handle service problems and help customers reconfigure their networks when necessary.

About 100 people compose the sales force at ALC. These are split between a telemarketing group for residential and a field sales force for larger customers and dedicated line services.

Asked why ALC pursues the residential market, when fully two-thirds of its revenues come from the commercial side, Maloney explains that this is necessary to optimize the network during off-peak hours. But he adds that the company plans its expansion carefully, so as not to be overwhelmed with numerous, low-volume customers. "If we see that a particular spur off a backbone is not completely used, we can blitz that area with telemarketing," he says.

Pure Business

Shunning residential customers completely, fifth ranked Cable & Wireless Communications Inc.'s long-distance arm, TDX Systems Inc., is targeted at business customers. A subsidiary

Continued on page 35

Tracking the Second Tier

CZATDANA INAN, MARKET RESEARCH DIRECTOR

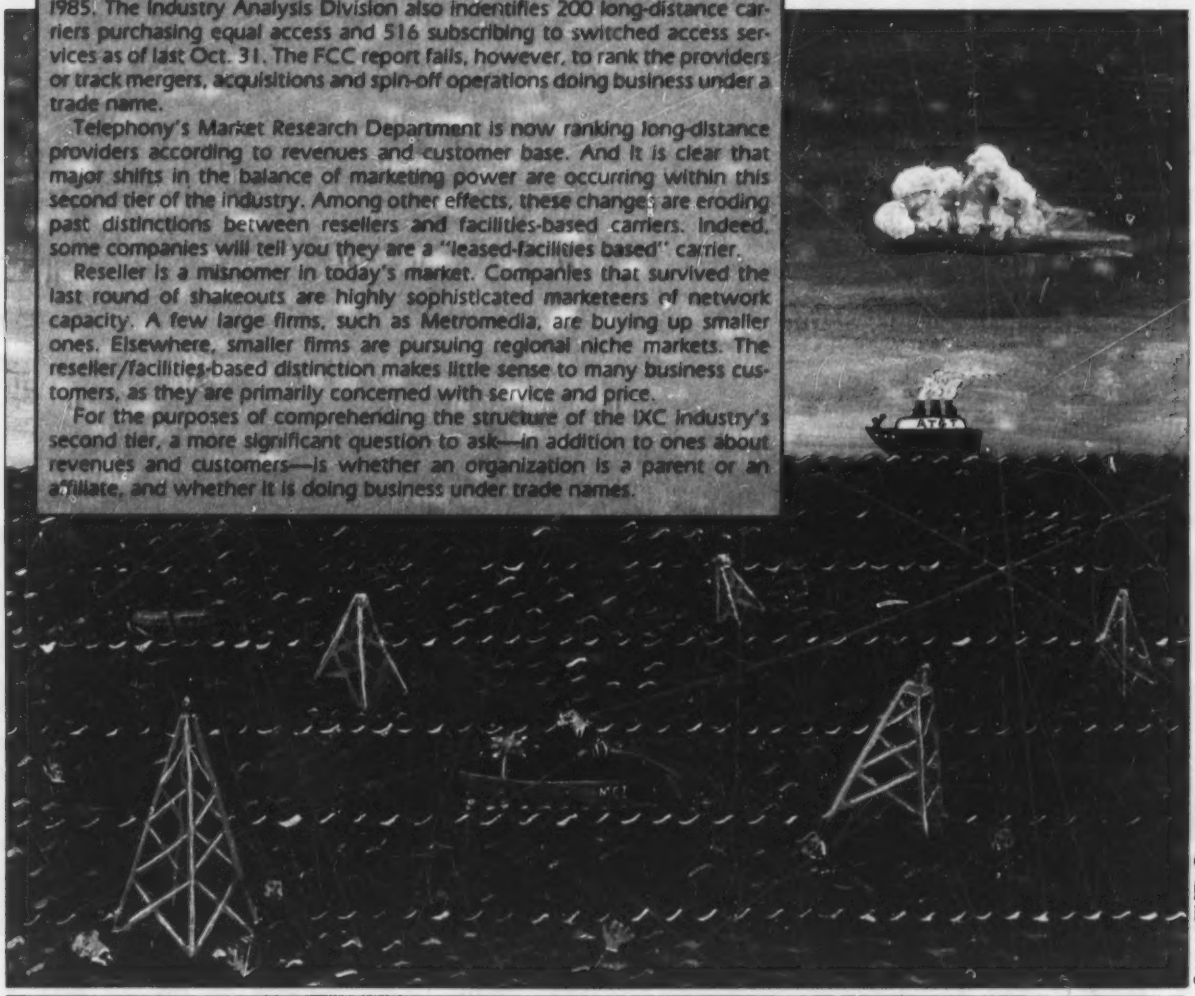
THE LONG-distance marketplace below the top few companies is a puzzle. Conventional wisdom has resellers floundering in the waves while AT&T, MCI, US Sprint and one or two others keep above water and hope for calm seas. Together, these top carriers account for 90% of the market.

Yet the Industry Analysis Division of the Federal Communication Commission reports there were 348 "entries" with Feature Group A or Feature Group B carrier identification access codes as of this January, up from 217 in 1985. The Industry Analysis Division also indentifies 200 long-distance carriers purchasing equal access and 516 subscribing to switched access services as of last Oct. 31. The FCC report fails, however, to rank the providers or track mergers, acquisitions and spin-off operations doing business under a trade name.

Telephony's Market Research Department is now ranking long-distance providers according to revenues and customer base. And it is clear that major shifts in the balance of marketing power are occurring within this second tier of the industry. Among other effects, these changes are eroding past distinctions between resellers and facilities-based carriers. Indeed, some companies will tell you they are a "leased-facilities based" carrier.

Reseller is a misnomer in today's market. Companies that survived the last round of shakeouts are highly sophisticated marketeers of network capacity. A few large firms, such as Metromedia, are buying up smaller ones. Elsewhere, smaller firms are pursuing regional niche markets. The reseller/facilities-based distinction makes little sense to many business customers, as they are primarily concerned with service and price.

For the purposes of comprehending the structure of the IXC industry's second tier, a more significant question to ask—in addition to ones about revenues and customers—is whether an organization is a parent or an affiliate, and whether it is doing business under trade names.



Cover art by Mike Zimmerman

of Cable & Wireless North America Inc., which in turn is a subsidiary of Cable & Wireless plc, London, the IXC reported $165 million in 1986 revenues for the year ended March 31, and claims 50,000 business customers.

Regarding marketing efforts, Oberlin says that direct sales—there are 180 people for the company's 20 markets—have been the most powerful tool.

In contrast to ALC's experience, telemarketing did not work for this business carrier. "We went into telemarketing and dropped it," Oberlin says, observing that a telemarketing approach is probably best suited for consumer products sold on a price-only basis. Likewise, the company has not used many direct mail campaigns, says Oberlin, because it believes these work best with a telemarketing thrust.

Oberlin also reports that the company is now more actively pursuing reseller contacts. "Even small resellers are in a position to stay around. The telecommunications professionals will stay around," he says.

Patrick Fiske, director of public relations at American Network Inc., agrees. "We think in the long run, long distance will become more and more a commodity service," he says, adding that sales and support become the critical element for success in such an environment. Fiske says the company has targeted the $5000 to $10,000 a month business customer.

One of the largest resellers, American Network has been on a buying binge of smaller companies over the past two years. Among its main acquisitions last year were two California-based companies, Startnet and ATE. Currently, American Network claims some 80,000 customers, two-thirds of whom are business subscribers, and adjusted 1986 revenues of $174 million. Its sales organization includes 15 offices in major cities, and the company announced last month a 10-year lease of a Williams Telecommunications Co. facility.

According to Fiske, who says the carrier is targeting nationwide rather than regional service, the company believes it occupies the number six slot in the industry's revenue table.

Even quite small, regional resellers believe they have a place in the market. Gib Carpenter with TMC of Arkansas compares the relationship between reseller and facilities-based carrier with that of the airlines and travel agents. "Resellers are in an enviable position, they're not tied to huge capital investments," says Carpenter, who says his 1 million minute per month company is the second

Continued on page 56

FIGURE 1 TOP CARRIERS' 1986 NET REVENUES

Source: Telephony/Market Research
*estimated by Telephony
a: includes US Sprint last six month revenues of $1,141.1 million, first six month US Telecom revenues of $212.4 million and estimated comparable first six month revenues for GTE Sprint of $661.5 million.
b: as of 9/30/85
c: National Telecommunications Network consortium
d: estimated fiscal 3/31/87
e: 250,000 total customers
f: current annualized revenue is $174 million, due to aquisition of Startnet (9/86) and ATE (11/86)
g: estimated on revenues of $44.7 million as of 9/30/86
h: not available

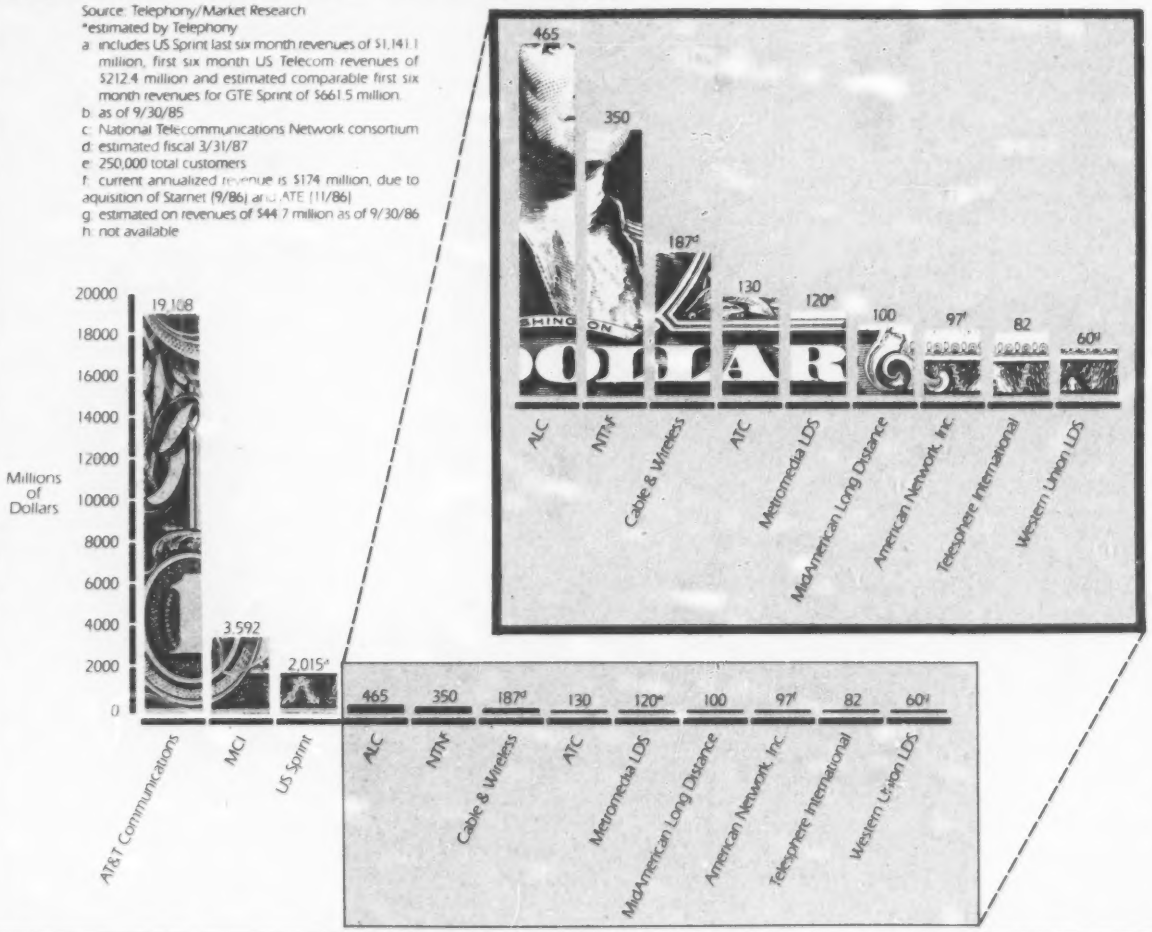
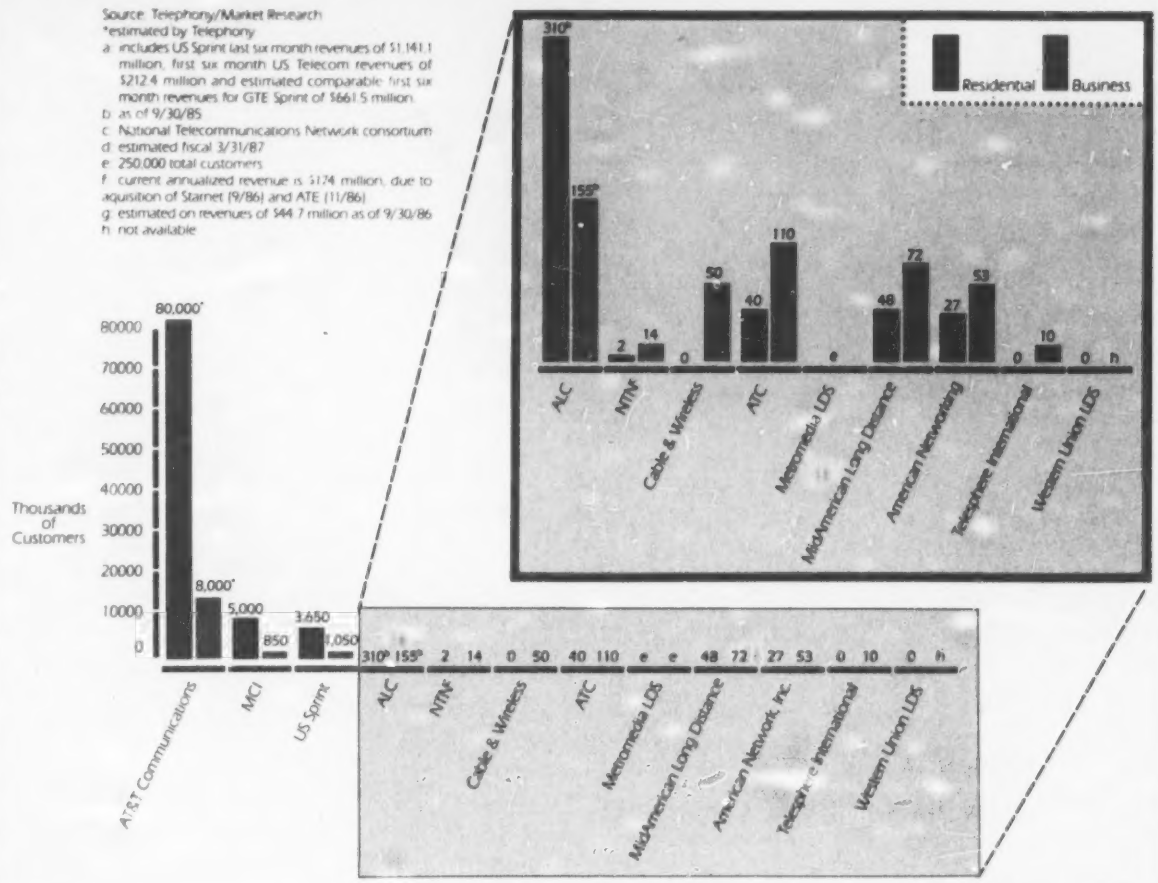


FIGURE 2 1986 BUSINESS/RESIDENTIAL CUSTOMER BASE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f: current annualized revenue is $174 million, due to acquisition of Starnet (9/86) and ATE (11/86)
g: estimated on revenues of $44.7 million as of 9/30/86
h: not available
Residential
Business
Thousands of Customers
80,000*
8,000*
5,000
850
3,650
1,050
310* 155* 2 14 0 50 40 110 e e 48 72 27 53 0 10 0 h
AT&T Communications
MCI
US Sprint
ALC
NTN*
Cable & Wireless
ATC
Metromedia LDS
MidAmerican Long Distance
American Network, Inc.
Telesphere International
Western Union LDS

IXCs

Continued from page 35

largest alternative carrier in Arkansas behind AT&T.

This analogy is only partly accurate, of course.

Resellers can pick and choose from among the carriers, but they are not commissioned agents of those companies. At least, not yet. It is provocative to imagine whether such sales agency joint ventures will appear sometime in the near future.

Carriers' Carriers

Finally, there are the regional FO carriers, sometimes called the carriers' carriers.

"I see the fiber carriers as wholesalers," says The Yankee Group's Ayvazian. "What these guys are doing is forming operating agreements with the second tier [companies], who in turn act as resellers."

But regionals such as LDX Net Inc., which recently created a national sales force, seem intent on pursuing a resale strategy as well. Indeed, a reflection of the battles brewing in the second tier is the fact that LDX Net's sales team is reportedly invading the territories of the other six companies in the National Telecommunications Network, the two-year-old consortium of regional fiber carriers to which it belongs.

Regulatory Matters

While the IXCs learn how to carve out their markets, debate has begun in earnest about having seven new players enter the game; namely, the Bell regional holding companies.

According to ALC Vice President and General Counsel James Tobin, the most pressing regulatory event for carriers is the proposal, made last month by the Department of Justice, to allow the Bell regional holding companies to offer interLATA services outside their franchise territories.

"It's the camel's nose under the tent," says Tobin, who was recently elected vice chairman of CompTel, a Washington-based association of about 200 IXCs.

"Either we'll see a host of BOC to BOC interLATA agreements, or a request from the BOCs in a year's time to do away with the extraterritorial restraint because it's impractical," he says. Tobin believes the second scenario is more likely.

Whether or not the RHCs enter, however, the marketing realities will likely remain the same. Price differences will drop, and consumers will increasingly look to their IXCs for value-added services. As TDX Systems' Oberlin puts it: "You have to be more than a price per minute from Chicago to Washington. You need an overall package." □

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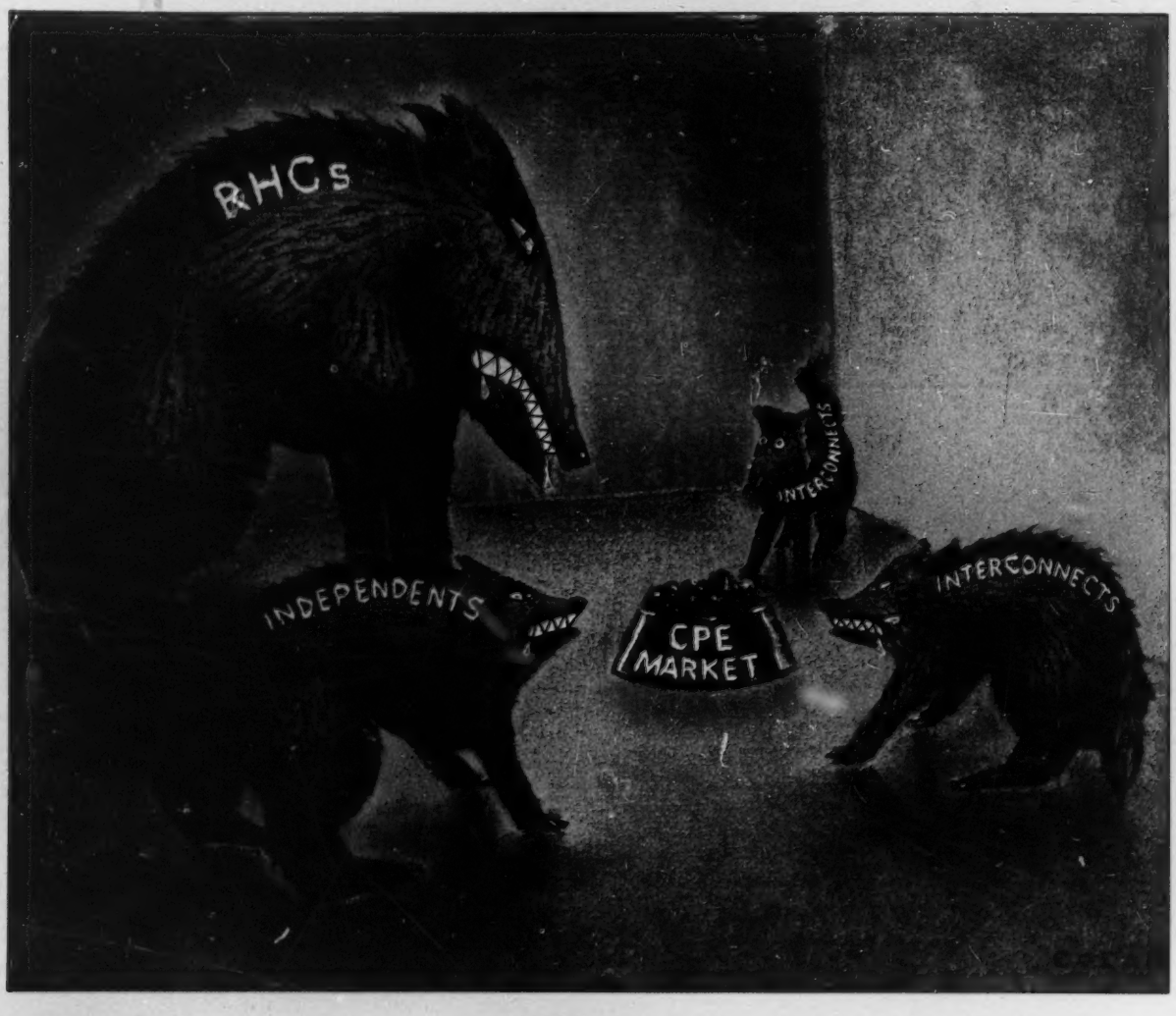

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Telephony

COVERING TELECOMMUNICATIONS SINCE 1901

MAY 11, 1987

TOP HEADLINES

Lemasters leaves Contel 13

FCC ruling threatens Project Victoria 13

WASHINGTON NEWS

Congress dubious of DOJ about-face 14

NECA paves way for rate cuts 14

Nynex plugs for int'l service 14

NEWS OF THE WEEK

SWB to stage videotext trial 21

BellSouth spotlights Ringmaster 21

Pac Bell to pay $191M refund 21

AS WE SEE IT

Try, Try Again
The DOJ's recent retraction of its recommendation allowing the RHCs to provide long-distance service leaves the public with lots of unanswered questions 27

DEPARTMENTS

Advertisers' Index 118

Helpful Literature 120

Letters 12

Meetings 11

Moving Around Industry 101

New Products and Services 72

News of the Week 21

Plant Man's Notebook 71

Top Headlines 13

Washington News 14

CPE MARKET SURVEY

A Dog-Eat-Dog World
By Larry Lannon and Czatdana Inan. The traditional interconnects are having a tough time competing in a market flooded with CPE suppliers affiliated with telcos 30

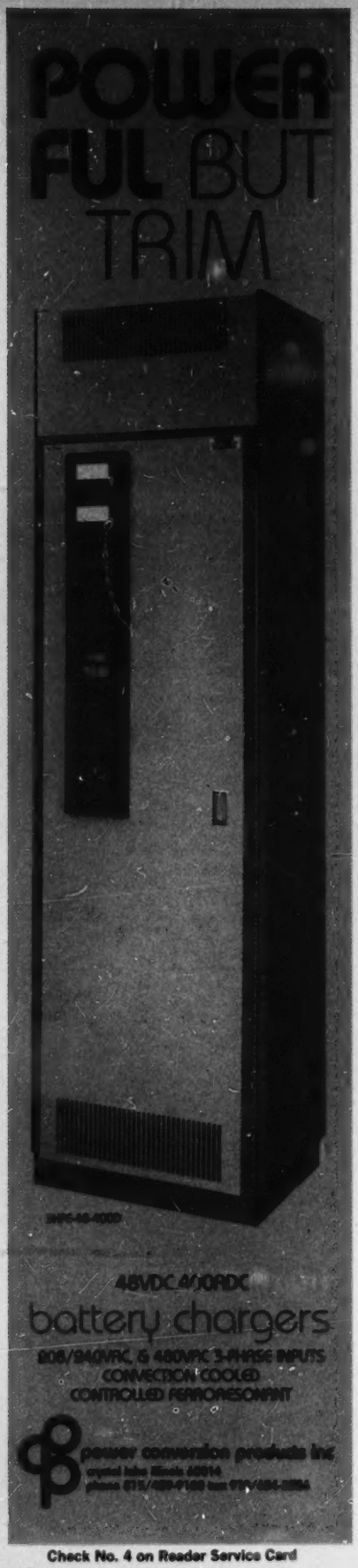
CPE Industry Leaders Respond
The interconnect executives map out the path to profits 38

INTERCONNECT MARKETING

Remote Access Adds Flexibility
By Peter F. Polizzano. Remote access devices potentially can expand the business horizons of many interconnect companies 58

OUTSIDE PLANT

Conestoga Tel Gets In the MODE
By Robert E. Meyers. Conestoga Telephone proves that even small telcos can afford to mechanize their outside plant records 65



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The CPE Marketplace Is a Dog-Eat-Dog World

LARRY LANNON, EDITOR,
AND CZATDANA INAN,
RESEARCH DIRECTOR

Cover art by Jim Colao

AFFILIATES of the regional holding companies are rapidly becoming the dominant players in the customer premises equipment market. And CPE competitors affiliated with large Independent local exchange carriers continue to play crucial roles in the CPE market.

The market power of CPE competitors affiliated with either an RHC or an Independent parent company can be expected to become even greater in the next few years as customers increasingly demand CPE systems which can handle integrated communications.

How are the traditional interconnects doing in the contemporary CPE market? On the whole, not too well. But the prosperous interconnects are doing very well indeed.

These conclusions are based on work done by Telephony's Market Research Department for this year's Composite Index of U.S. Business CPE Providers. This story will be based entirely on data in the index. The complete index will be released as a research report. (For more information about the Composite Index of U.S. Business CPE Providers, contact Telephony's Market Research Department.)

The contemporary interconnect industry is dominated by three types of companies: CPE competitors affiliated with Bell regional holding companies, CPE competitors affiliated with Independent telephone companies and traditional interconnect companies. In addition, retailers play a role in the market. There also is a group of fairly small but prosperous interconnects who are making their marks right now and bear watching.

The Composite Index of U.S. Business CPE Providers lists 25 RHC affiliates, Independent affiliates and interconnects, including three up and coming interconnects (Figure 1). As a whole, those CPE Top 25 had estimated and reported sales of approximately $2.6 billion in 1986. The 1986 sales of the CPE Top 25 represent a robust growth of 21% from sales of approximately $2.2 billion in 1985. That rate of growth is expected to continue this year. The CPE Top 25 expect to sell roughly $3.2 billion worth of equipment this year, a 22% growth rate.

Growth in the 21% to 22% range is healthy by anyone's standards. But, for the CPE Top 25, growth of that magnitude actually represents a slowdown. In 1984, the CPE Top 25 reported sales of $1.7 billion. Since 1986 sales were $2.2 billion, the CPE Top 25 enjoyed a 27% growth rate in 1985, 6% above the 1986 growth rate and 5% over the projected 1987 growth rate.

Though the index clearly shows how the strongest elements in the rough CPE market are doing, it does not touch upon the other half of the business equation, the progress and prospects for the weaker companies.

But it is clear that many CPE competitors continue to struggle with difficult conditions in a market that once seemed to reward nearly everyone with its bounty. Harsh competition has crushed the fondest hopes of some CPE entrepreneurs. Failures and sharp earnings drops function as monuments to an unforgiving and sophisticated market.

As users, particularly large users, increasingly demand integrated CPE or at least CPE which will not preclude integration sometime in the not too distant future, technological mastery is playing a correspondingly greater role in the market. Today, the ability to provide sophisticated, flexible systems to business customers and to maintain those systems over a prolonged period is supplanting the importance of the sales-making expertise which fueled the rapid growth of the traditional interconnect industry during its heyday a few years ago.

Traditional interconnects have demonstrated in the past that they can identify the market's real needs and respond to them. Now they again must respond creatively to a market in rapid transition.

But this time, CPE competitors associated with Bell and Independent parents are determined to be more customer-oriented, more responsive, more competitive. They are confident they have learned the hard lessons the interconnects taught them a decade ago. They also continue to believe they have unparalleled credibility on technical matters. The growing importance of technological sophistication in the CPE market plays to their strength, or so these competitors believe.

Underlying competition within the CPE market is the revival of Centrex service. Not only must CPE competitors flail away at one another, they also must compete with a CO-based technology they once thought had

Telephony's annual survey of the top players in the CPE industry reveals a battleground dominated by affiliates of the regional holding companies

been vanquished but which has now emerged infinitely stronger in its new guise as the transitional step or even gateway to the ISDN. CPE competitors affiliated with parent companies built around the local exchange business are likely to take a much more benign view of Centrex service than are traditional interconnects.

So once again market forces seem to be exerting maximum pressure on a particular type of competitor. It is the traditional interconnect which is likely to be hurt the most by the Centrex revival.

The clash in the CPE market promises to heat up even more in the coming year. Traditional interconnects are likely to continue to feel the squeeze the most. These market pressures probably will increase the gulf between the strong and the weak interconnects, and call the continued viability of the weaker interconnects into question.

Each of the seven RHCs has a CPE affiliate. This seven-member market segment will continue to be the most significant and dynamic factor in the CPE competition.

The RHC affiliates remain extremely reluctant to talk in specifics about their progress in the market. The index consists of Telephony's estimates about the RHCs' sales. In 1984, the seven RHCs had estimated sales of $650 million. In 1985, estimated sales had jumped by an astonishing 51% to $980 million. However, that estimate includes Centrex and other network service sales; if those sales are subtracted, the RHC affiliates' growth rate would be roughly 21%.

Last year, their estimated sales were approximately $1.3 billion, a muscular growth rate of 30%.

During the coming year, the RHC affiliates are expected to sell roughly $1.7 billion worth of CPE equipment.

Their annual growth rate is expected to be 32%, a 2% increase over the 1986 rate.

US West Information Systems had 1986 sales of $89 million in its 14-state area, and a whopping 53% increase over 1985 sales. Southwestern Bell Telecom had annual sales of more than $100 million for the third straight year, and recorded a 14% increase in 1986.

Four Independent affiliates are in the CPE Top 25. They are Centel Business Systems, Contel/Executone, SNET Telecommunications Group and Rotelcom Network Systems.

As a group, the four Independent affiliates are doing much better than they were.

In 1984, the four Independents reported sales of $517 million worth of CPE equipment. In 1985, their CPE sales had improved but only by a marginal 1% to $525 million. The low 1985 growth rate, however, reflected Centel's sale of a non-affiliated supply business; if that sale had not led to a restatement of sales revenue, the growth rate for the four Independent affiliates in 1985 would have been 10%. Last year, the four Independent affiliates reported CPE sales of $594 million, a solid 13% growth rate.

Centel Business Systems reported a 14% increase in sales, from $193 million in 1985 to $220 million in 1986. Contel/Executone reported sales jumped from $215 million in 1985 to $268 million in 1986, a vigorous 25% improvement.

However, SNET's sales declined 3% from $70 million in 1985 to $68 million in 1986. Rotelcom's dropped 17% from $47 million in 1985 to $39 million in 1986.

According to our projections, the four Independent CPE competitors can look forward to an improving picture for the current year. They are expected to sell $712 million worth of CPE gear and services in 1987, a 20% growth rate. Each is projecting unproved sales this year.

The RHC and Independent affiliates are both showing their muscle in the CPE market. But a group of 11 traditional interconnects also put their shoulders to the CPE grindstone last year. And their display of sinew paid off handsomely in sales.

Two of the 11 interconnects had sales in excess of $100 million last year, according to our index.

Telecom Plus, Boca Raton, Fla., had estimated sales of $255 million in 1986, up from the $250 million it had in 1985.

RCA Telephone Systems, Cherry Hill, N.J., reported sales of $120 million last year, up $10 million from its 1986 figure of $110 million.

Four interconnects reported sales in the $30 million to $90 million range. Universal Communications Systems, Roanoke, Va., reported sales of roughly $87 million to lead this group. Universal Communications' 1986 performance was at the $66 million level, so the company enjoyed a 31.8% growth rate during the year.

Norstan's 1986 sales were roughly

$76 million. The Plymouth, Minn.,-based interconnect reported a spectacular 76.7% rate of growth from 1985 sales of approximately $43 million.

Communications Corp. of America, Dallas, suffered through a tough year. Its 1985 sales of $50 million slumped 14% to roughly $43 million. Jarvis Corp., Glen Allen, Va., enjoyed steady growth of 14% last year, reporting a sales increase from $31.5 million in 1985 to $36 million in 1986.

Five companies composed the third echelon of the 11 interconnects in our index this year.

Communications Consultant Inc., Phoenix, Ariz., reported that sales, which were $23 million in 1985, increased by 21.7% to $28 million in 1986.

ABI American Businessphones, Irvine, Calif., which had sales of $16 million in 1985, reported sales of $24 million in 1986, a 50% growth rate.

Gray Communications, Pittsburgh, reported sales of $25 million in 1986, up 38.8% from 1985 sales of $18 million.

Standard Telecommunications, South Hackensack, N.J., had a flat growth curve last year. It reported sales of roughly $20 million in 1985 and approximately $19 million in 1986.

Henkels & McCoy/Telecom Systems, Blue Bell, Pa., suffered through a 44% decline in sales, going from $34 million in 1985 to $19 million in 1986.

It is significant that the 11 traditional interconnects included in our CPE Top 25 anticipate collective growth of 13% next year. Only Communications Corp. of America anticipates a decline in sales revenues during 1987. Most anticipate fairly modest growth.

Two of the 11 traditional interconnects anticipate major growth during '87.

Universal Communications sees its sales revenues jumping 22% this year, from roughly $87 million in 1986 to $106 million. Norstan is even more optimistic. It anticipates sales revenues of $100 million in 1987, up 31% from last year's figure of roughly $76 million.

Three up and coming interconnects are included in the CPE Top 25

FIGURE 1 COMPOSITE INDEX OF U.S. BUSINESS CPE PROVIDERS

	Sales ($000,000)			
	Actual 1984	1985	1986	Est. 1987
7 RHC Affiliates	650.0*	980.0* +51%[a]	1,275.0* +30%	1,689.0* +32%
Independent Affiliates				
Centel Business Systems (Chicago, IL)[b]	219.7	193.0[c]	219.8	288.0*
Contel/Executone (Atlanta, GA)	195.0*	215.0*	268.0*	305.0*
SNET Telecommunications Group (New Haven, CT)	52.6	69.8	67.6	76.8
Rotelcom Network Systems (Rochester, NY)[d]	50.0	47.0	39.0	42.5*
	517.3	524.8 +1%[c]	594.4 +13%	712.3 +20%
Non-Affiliated				
Telecom Plus (Boca Raton, FL)	155.2	249.9*	255.0*	283.0*[f]
RCA Telephone Systems (Cherry Hill, NY)	102.0	110.0	120.0	130.0*
Universal Communications Systems (Roanoke, VA)	64.9	66.4	86.9	106.0*
Norstan (Plymouth, MN)	31.5	42.6	76.3[g]	100.0
Communications Corp. of America (Dallas, TX)	62.1	50.1	42.6	32.0
Jarvis Corp. (Glen Allen, VA)	26.7	31.5	36.0	38.0[h]
Communication Consultants, Inc. (Phoenix, AZ)	18.0	23.3	28.2	29.0
ABI American Businessphones (Irvine, CA)	9.1	16.3	23.9	33.0*
Gray Communications (Pittsburgh, PA)	20.0	18.0	25.0	30.0*
Standard Telecommunications (S. Hackensack, NJ)	17.2	19.7	19.4	25.0[i]
Henkels & McCoy/Telecom Systems (Blue Bell, PA)	26.0	34.0	19.0[j]	21.0
	532.7	652.8 +23%	732.3 +12%	827.0 +13%
Up & Coming (and Profitable)				
ATS Telephone & Data Systems (Memphis, TN)	9.9	10.1	14.5	16.1
Communications World Intl. (Denver, CO)	5.1	6.2	8.1	11.0
Interconnect Communications Corp. (Houston, TX)	3.5	4.5	6.8	8.5*
	18.5	20.8 +12%	29.4 +41%	35.6 +21%
25 Competitors' Index Total:	1,718.5	2,178.4 +27%	2,631.2 +21%	3,209.4 + 22%
Retail with Outside Sales Index				
Tandy Corp. (Fort Worth, TX)				
% Increase/Decrease Telecom Sales	nr	+11.9%	+11.6%	+12.1%*

Centel Business Systems and Supply	1984	1985	1986
Sales ($000)			
Regulated Affiliates[a]	36,068	40,489	42,268
Other Customers	219,674	193,097	219,759
	257,742	233,586	262,027
Operating Income ($000)	10,421	(3,877)	6,121
Order Backlog ($000)	96,768	71,411	77,834
Assets ($000)	148,605	120,261	241,561
Installed Lines	700,085	825,171	1,146,402
Employees	2,111	1,941	2,593[b]
Locations	52	56	109[b]

a: Centel Supply sales
b: reflects acquisition of M/A-Com Information Systems

Source: Telephony Market Research
*estimated by Telephony
a: 1985 and thereafter includes Centrex (valued at $162 million in 1985 increase over 1984)
b: does not include sales by Centel Supply to regulated affiliates
c: does not include revenues of non-affiliated supply business sold 1/20/86
d: sales to non-affiliated customers
e: acquired Compath

Universal Communications Systems	1984	1985	1986
Financials ($000)[a]			
Total Sales	64,900	66,400	86,900
Cost of Sales	56,900	56,600	76,700
Orders Booked	10,900	10,900	16,100
Total Inventory Levels	34,000	34,300	49,000
Installed Lines	626,000	725,000	810,000
Employees	537	595	876
Locations	nr	nr	220

a: financials are fiscal year (June 30), otherwise calendar year

Norstan Inc.[a]	1984	1985	1986[b]
Financials ($000)			
Total Sales	31,464	42,617	76,260
Cost of Sales	23,103	30,957	56,086
Orders Booked	35,459	47,983	70,000
Inventory Level	8,205	7,175	16,425
Assets	38,246	39,843	55,689
Installed Lines	150,000	170,000	390,000
Employees	492	619	978
Locations	11	11	19

a: fiscal year ending April 30
b: acquired Electronic Engineering Co.

Communications Corp. of America	1984	1985	1986
Financials ($000)			
Total Sales	62,079	50,097	42,611
Cost of Sales	52,635	45,957	37,324
Orders Booked	15,000	10,075	3,995
Inventory Level	20,877	22,832	15,971
Assets	44,000	43,580	24,552
Installed Lines	275,000	325,000	420,000
Employees	637	665	489
Locations	23	24	20

Communication Consultants, Inc.	1984	1985	1986
Financials ($000)			
Total Sales	17,964	23,283	28,228
Cost of Sales	10,938	15,154	17,083
Orders Booked	21,400	29,500	31,618
Inventory Level	1,849	2,317	2,496
Assets	7,371	9,807	9,314
Installed Lines	136,800	151,450	159,430
Employees	219	283	290
Locations	4	5	5

ABI American Businessphones[a]	1984	1985	1986
Financials ($000)			
Total Sales	9,095	16,293	23,897
Cost of Sales	5,095	9,537	13,126
Inventory Levels	483	2,729	4,062
Assets	2,882	10,543	13,211
Installed Lines	28,800	63,000	108,000
Employees	84	236	269
Locations	8	12	14

a: fiscal (June 30)

Gray Communications	1984	1985	1986
Financials ($000)			
Total Sales	20,000	18,000	25,000
Inventory Level	3,800	4,200	5,100
Installed Lines	45,000	75,000	125,000
Employees	217	214	270
Locations	6	6	7

f: Telecom Plus acquired by Siemens
g: acquired Electronic Engineering Co.
h: Jarvis Corp. acquired by Isoetec
i: Standard Telecommunications acquired by JMP, Inc.
j: decision to cutback on national territories

this year. They are ATS Telephone & Data Systems, Memphis, Tenn.; Communications World International, Denver; and Interconnect Communications Corp., Houston.

ATS reported that its sales went up 44.5% last year, from $10 million in 1985 to $14.5 million last year.

Communications World also had a big year, reporting a 31% increase from 1985 sales of approximately $6 million to 1986 sales of roughly $8 million.

Interconnect Communications enjoyed an eye-popping 51% growth rate last year, from 1985 sales of $4.5 million to 1986 sales of roughly $7 million.

Considered as a group, the three interconnects in our up and coming category reported 1986 growth rates of 41%. And the three overachievers are projecting 1987 growth rates of 21%, less than their 1986 performance, but surely nothing to sneeze at.

Of course, projections in the traditional interconnect sector of the CPE market are notoriously tentative. It is easy to understand the reason, which has to do with the individualistic, entrepreneurial character of the traditional interconnect industry.

Generalizations about interconnect companies are much easier to make than they are to document. Each company is subject to individual, frequently unique business pressures. Major changes in a given company's posture often are related to specific business decisions, some of which are not captured in our index.

For instance, look at Henkels & McCoy/Telecom Systems, a company which at first glance seems to have suffered through a disastrous 1986. Last year the Pennsylvania-based company decided to cut back the national scope of its operations, a decision which contributed largely to its abrupt drop in sales but which also may well prove to have been in its best long-term interests. Next year, our index will provide data which affirms or contradicts that judgment, but this year's figures simply do not.

The accompanying tables provide snapshot looks at Centel Business, Universal Communications, Norstan, Communications Corp. of America, Communication Consultants, ABI

American Businessphones and Gray Communications.

In addition, acquisitions continue to play an important role among traditional interconnects. The trend toward consolidation among traditional interconnects follows several years of brutal price competition which has undercut margins and profits.

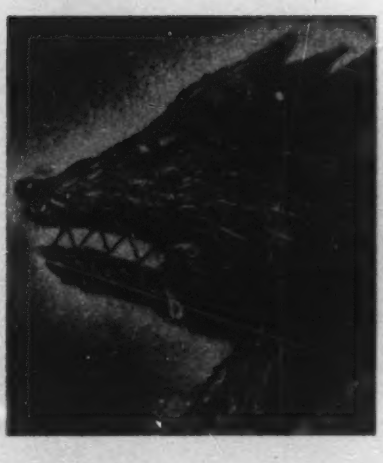
Though price competition in the key system market has been particularly rough, several healthy key system vendors have emerged. American Businessphones and Communications World are conspicuous among the key system success stories.

Perhaps the single most significant interconnect story during the past year was the acquisition by Siemens of Telecom Plus. In 1985, Telecom Plus reported sales of nearly $250 million and made a significant acquisition of its own when it picked up Compath. Its acquisition of Telecom Plus provides Siemens, a major CO and PABX switching manufacturer, with an experienced distribution channel for its CPE product line.

In addition, Norstan acquired Electronic Engineering last year. JWP Inc., recently acquired Standard Telecommunications and Jarvis was acquired by Isoetec.

Granted that interconnects have as many differences as similarities, it is clear that the traditional interconnect segment is undergoing a sea change in its economic weather. The CPE market which created and nurtured the interconnect industry, and which the interconnect industry did so much to bring to maturation, is rapidly vanishing.

The response of individual interconnect companies to these fundamental changes will determine whether they sink under the gale or swim with the new, strong tides.



The seven RHC affiliates are determined to swim profitably with the tides. And for them the tides seem to be running favorably. They are adding staff and installing more lines. The RHC affiliates are pinning their hopes for sustained growth squarely on business users' maturing needs for integrated voice and data systems. Growth in data traffic is expected to drive growth in demand. The RHC affiliates intend to meet those data needs.

The data communications market will grow in the 15% to 20% range this year, according to our research, much more than the 5% to 8% growth projected for voice communications. The product lines being handled by the RHC-affiliated CPE competitors reflect their commitment to a growth-through-data strategy.

A quick product line tour illustrates the point.

Bell Atlanticom Systems carries the Compaq PC workstation, as well as a variety of modems and muxes among its products. BellSouth Advanced Systems features modems, muxes, terminals, printers, entire local area networks and PCs among its product line.

PacTel Info Systems' product line includes muxes, modems, computers and PC LANs. U S West Information Systems has the usual muxes and modems as well as Micom data PBXs and a variety of LANs.

Need voice mail or sophisticated network management equipment? The local RHC-affiliate has them. In the market for fax equipment? How about a computer? How about a lot of computers? The local RHC-affiliate would like to do business.

Of course, the RHC-affiliates are not alone in reacting to the major changes sweeping the CPE market. A growing number of interconnect companies are now doing business with—rather than at the expense of—the RHC-affiliates. Urged on by the North American Telecommunications Association, the interconnect trade group noted for its anti-telco tradition, these enterprising interconnects have entered into sales agency relationships with six RHC affiliates. Those relationships allow the NATA members to sell Centrex service and other network services, and even subcontract CPE sales. The only RHC which is not participating in sales agency relationships is PacTel InfoSystems. Other interconnects are entering into franchising operations. Teleco USA, Arlington, Texas, for instance, used franchising relationships involving 30 interconnects to sell roughly $98 million worth of CPE in 1986.

All the players in the CPE market—traditional interconnects, RHC-affiliates and Independent-affiliates—are poised to respond rapidly, flexibly, creatively to a market which is more fluid today than ever. They have no choice. The alternative to flexibility and creativity is catastrophe.

For the foreseeable future, that's the way it's going to be in CPE. □

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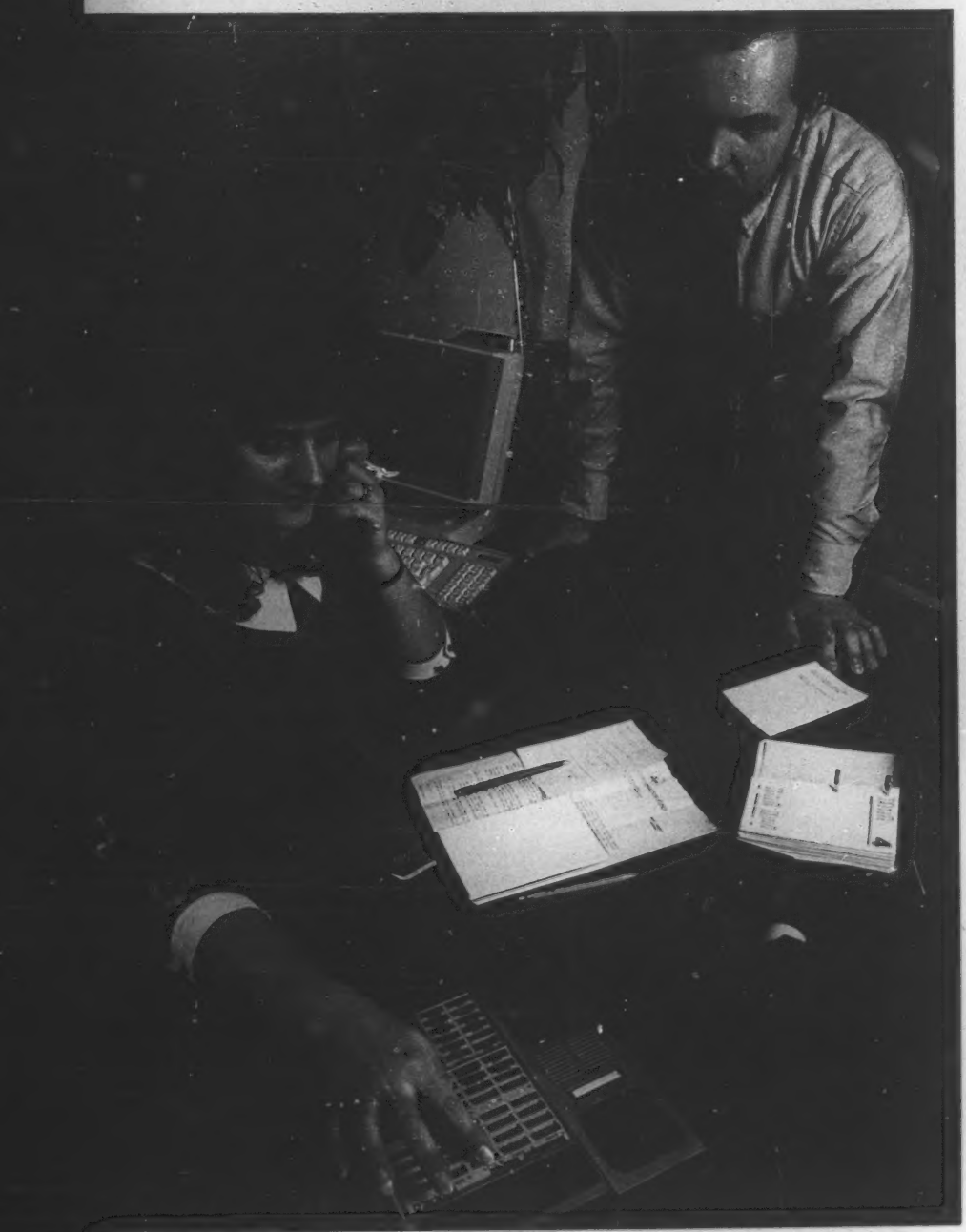

COVER

A CPE Network and Centrex: A Hands-On Guide to a Perfect Match

TOP NEWS

Small telcos seek data on RTB loans

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COVERING TELECOMMUNICATIONS SINCE 1901

MAY 18, 1987

TOP HEADLINES

Small telcos seek data on RTB loans 13

Bell Canada buys into Memotec 13

AT&T trims 4.3% in latest rate cut 13

WASHINGTON NEWS

Commenters tear into MFJ plan 16

Rural programs hinge on final budget 16

State lawmakers join SLC fight 16

NEWS OF THE WEEK

LeBow to merge WU, ITT unit 30

ISDN Numbering Forum flounders 30

COMSAT merger fading fast 30

AS WE SEE IT

Free Project Victoria
FCC policies designed to maintain a fair playing field are stifling the implementation of new technology 43

DEPARTMENTS

Advertisers' Index 128

Meetings 11

Moving Around Industry 112

New Products and Services 90

News of the Week 30

Plant Man's Notebook 88

Top Headlines 13

Washington News 16

The Way We Were 130

CPE MARKET APPLICATION

Making a CPE Network Fit Behind Centrex
By Dennis Brubaker. Workers at West Virginia's state Department of Workers Compensation now are more accessible thanks to a new key system used to back up Centrex lines 44

ISDN TECHNOLOGY

Making the ISDN Work
By Marcie G. Walker and Robert A. Hess. D-channel signaling is crucial to the success of ISDN. Here's a nuts and bolts look at this transmission technology 52

The Basic Rate Interface and ISDN Terminals
By William H. Chriss and Gerald S. Soloway. The basic rate interface opens the ISDN door . . . 62

MARKETING

The Power Shifts to MIS Managers
By Czatdana Inan and Sandra Williamson. A study of 72 Fortune companies reveals the identity of the real decision-makers 70

LOCAL LOOP TECHNOLOGY

Reconfigure in a Flash!
By Steven S. Cheng and Liang T. Wu. A new fiber hub switch allows rapid network reconfiguration to meet changing customer demands 76

REPORT

Pacific Bell Stages Another Winner
By Lloyd F. (Frank) Brisk. Vendor enthusiasm was at a peak at Pacific Bell's 1987 Operations Conference and Vendor Exhibit 82

Decisionmaking in the '80s

The Power Shifts to MIS Managers

CZATDANA INAN, DIRECTOR OF RESEARCH,
AND SANDRA WILLIAMSON, TECHNICAL EDITOR

IN MAJOR corporations today, the most important decisions about telecommunications are no longer being made by telecom managers. The new seat of power resides in management information services divisions where managers with data—rather than voice—experience are becoming the new communications gurus.

This finding was one of the results from a study of 72 Fortune companies conducted by Telephony and Northern Business Information Inc., a New York-based research firm.

The study shows unequivocally that the power of MIS is expanding continually to shepherd the vast new array of corporate information management interests. Indeed, data managers have taken charge and are shaping the future of the corporation in a way that managers of voice communications never could.

This power shift has important implications for local exchange carriers and the unregulated regional holding company subsidiaries gearing up to reach the new decisionmakers.

This fundamental change began in the early 1980s as companies began to shift their workload from centralized mainframes to networks of PC workstations. This placed unprecedented networking potential in user hands and sharpened the corporate focus on distributed information.

The shift also revolutionized the market for high bandwidth services, tipping control of the market to the LECs. The telephone companies read user signals correctly when deploying digital and fiber technology in the public network. As dial tone vendors, they recognized the smart move was to plan new services offering improved transmission quality and user control over a range of network capabilities. They also realized that high bandwidth demand in general and ISDN demand in particular would be driven not by voice but by data.

As a result, the LECs simultaneously began to reposition their sales efforts to gain the full confidence of corporate MIS influences. Organizational—not vertical—marketing dominates this repositioning.

Organizational marketing requires identifying everything from a customer's business strategy to analyzing where decisions are made in the organizational structure. BellSouth and Ameritech are among the RHCs hitting hard on this concept.

"We are guided by the corporate principles that make the business itself profitable," says Curtis Wall, national accounts marketing coordinator for BellSouth Advanced Systems. "Sales teams learn the company inside and out."

Perry Erhart, senior director of marketing, major accounts for Illinois Bell Communications, explains it another way.

"We are taking a mega industry approach that says all aspects of a business must be evaluated along with the businesses it interacts with," Erhart notes. "That way, there is some understanding of the networking or equipment requirements that the company will have."

In this scenario, specific applications and vertical marketing are secondary. Organizational marketing has profound implications for the LECs which want to ensure long-term profitability and strong cash flows from high bandwidth services.

The Telephony-NBI Survey of Corporate America quantifies the changes that have occurred and brings home the principles of the new corporate power structure.

The study shows that in 93% of service organizations and 63% of industrial companies telecommunications capital planning—voice, data, text and video—is centralized in one group. In 88% of industrials and 80% of service organizations, this group is designated as a corporate cost center under the control of the chief financial officer who reports directly to the

Continued on page 72

Methodology

THE Telephony-NBI Survey of Corporate America, conducted from July through September 1986, contacted 100 headquarters-based telecom groups among Fortune 500 companies. These companies represented a broad cross section of industrial and service organizations, with annual sales of $600 million to $40.7 billion.

An extraordinary 70% agreed to spend 45 minutes answering a detailed 12-page questionnaire that probed present and future bandwidth requirements. And 57 of these groups were contacted again by telephone in a follow-up interview.

In addition to assessing bandwidth needs, we did something no one else had done before. Each group was asked to draw on a piece of paper the exact line of command for product and service purchases in their company. The results are a look into the heart of the decisionmaking process.

CEO. This group, now labeled corporate information services more than half the time, is headed by a vice president. Telecommunications typically falls under CIS.

Reporting may or may not be through a director of telecommunications. Invariably, the CIS group includes a manager of telecommunications and, at the same level, managers of network design, network administration, systems software, systems analysis, technical support and data processing operations.

The reasons for this interdisciplinary task force clearly can be attributed to the relentless integration of voice and data and is tied to the new emphasis on corporate networking.

High-speed digital transmission offers economies of scale to organizations with high-traffic volume. Until five years ago, voice and data were generally managed by two separate groups which had little in common in day-to-day practices and goals. Voice tended to be on the administrative side, primarily involved in controlling costs. Transmission cost was a negligible portion of the cost of supporting MIS applications, but data personnel were intensely concerned with transmission quality and downtime. In the past, the loss of a voice line seldom had a noticeable effect on the overall telecommunications function. Data, however, was a different story. When a data line went down, the day's business went down with it.

In a high bandwidth environment, where voice and data are carried on the same links, reliability becomes even more critical. Given this imperative, there is little economic or managerial advantage in having separate control centers for voice and data.

Among Telephony-NBI respondents, 75% indicated that voice and data responsibility was integrated in their companies. By 1990, nearly 100% of these same companies will have integrated voice and data responsibility. When these communications merge, individuals with MIS backgrounds will become the leaders.

Part of the reason for this is in the inherent advantage that MIS has had within the corporation. Because MIS managers have been closer to the strategic planning process, they have benefited from high visibility within the corporation. According to John McManus, director of telecommunications, University of Illinois, voice managers were largely hidden from executives because telephone service just ran unobtrusively.

"Data people were accustomed to being on the line, used to making business cases, organizing projects and implementing technologies," McManus says. "The voice people simply depended on telcos for their backup. They didn't have the skills or the background of the MIS managers who were used to running their own organizations and managing and hiring technical people."

"CEOs want to get dial tone when they pick up the phone," Wall agrees. "They don't necessarily see the other things that the telecom manager is doing because they are not as obvious." Telecom management, he believes, was always more of a coordinating function because the Bell System "would come forth and almost ensure that the manager couldn't make a mistake."

But times have changed. "MIS managers had the edge because they could use a flow chart and check off products they produced that were useful to the corporation," Wall says.

Although the power of the telecom manager is greatly reduced, the study shows that he or she cannot be discounted totally in the decision-making hierarchy. When a decision-making hierarchy matrix was constructed from the study results, it clearly showed that telecom managers continue to be involved in high-level functions, such as where lines will be installed and how they will be configured. They also are making decisions whenever customer premise equipment interfaces with high-speed lines, usually at the PBX. They have little real power at the corporate level, however, where network issues are settled and purchase decisions are made on turnkey networks.

Significantly, LECs and the hardware and software affiliates of the RHCs and major Independents are currently well-positioned to deliver most capabilities users want and will want in the future. Their future success does not rest on ISDN; most of its features are available today on substitutable services. Their bottom line and biggest risk is that AT&T and IBM may forge stronger alliances with corporate MIS influences, relegating LECs to the transport business.

Data network reliability—transmission quality, customer control, security and cost—is the cornerstone of user concern (Table 1). To profit from this situation, LECs must convince MIS influences they can meet data demand with the same standards voice demand is satisfied. Some may even enter into strategic partnerships with their key customers, the way IBM did with General Motors for the manufacturing automation protocol, or MAP.

LECs will have to position themselves carefully as the virtual networkers of preference. New opportunities that can be sold today as part of almost any bandwidth management package, according to Telephony-NBI respondents, are voice-data PBXs, voice and electronic mail, tandem switches, T-1, local and wide area networks and database access.

Risks are high. But so are the rewards. And the LECs which do become the networkers of preference will be those with the full confidence of the MIS decisionmakers. □

TABLE 1 USER VOICECOM VS. DATACOM CONCERNS

	Of Critical Concern When Evaluating	
	Voicecom	Datacom
Network Reliability	77%	93%
Transmission Quality	61%	86%
Speed	11%	31%
Cost-Effectiveness	56%	53%
Customer Network Control	47%	59%
Security	27%	56%

Source: Telephony-NBI Survey of Corporate America

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SEPTEMBER 21, 1987

Telephony

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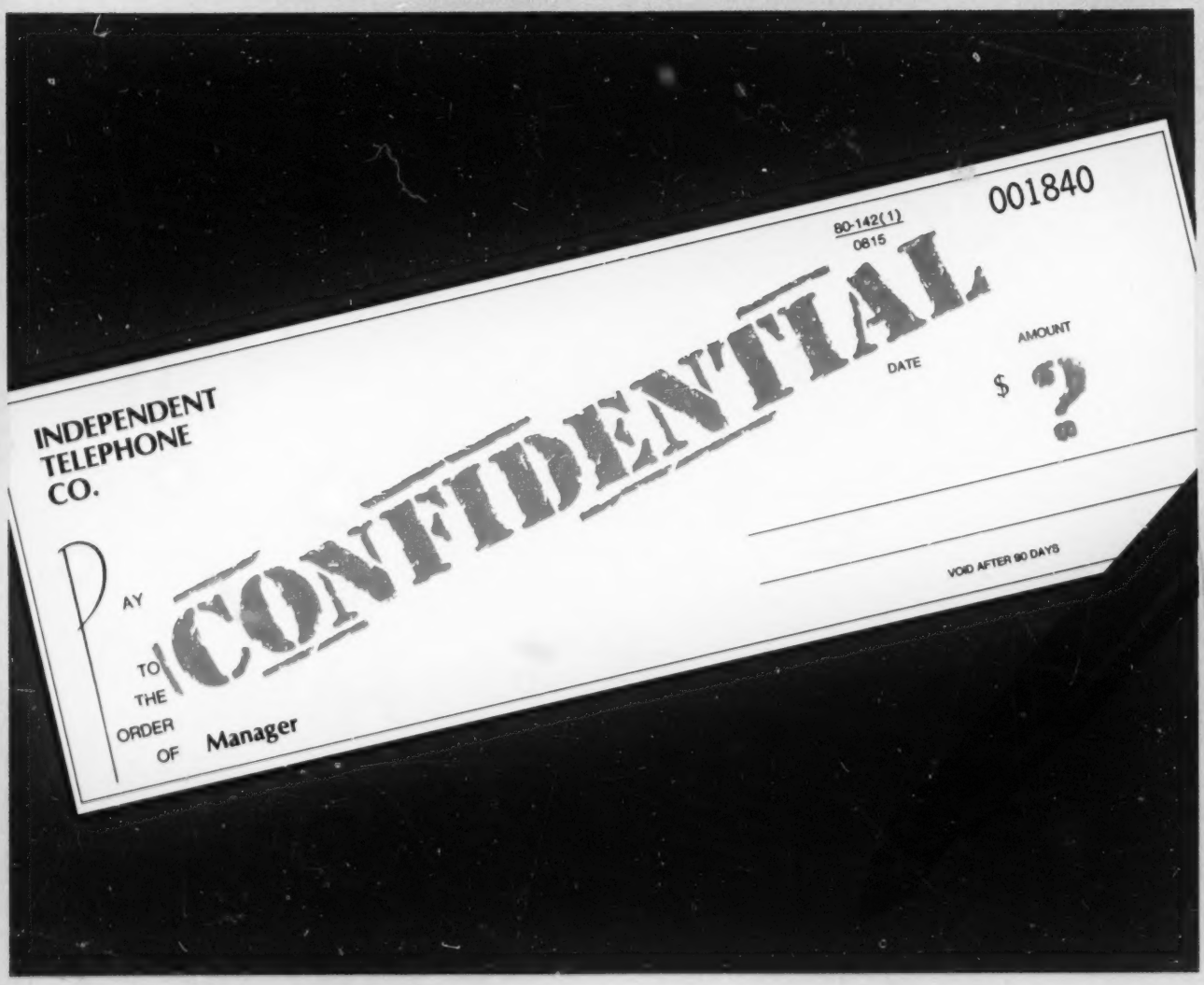

SALARY SURVEY OF INDEPENDENT MANAGERS

Independent telcos handsomely reward their corporate achievers, survey reveals

INDUSTRY SPLIT ON GREENE RULING

The information services industry is still uncertain of the ruling's impact

NO. TELECOM NETWORK GOES CORPORATE

DMS SuperNode technology will be applied to private networks

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SEPTEMBER 21, 1987 Volume 213, No. 12

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

Telephony's *salary survey of Independent managers takes the pulse of the Independent industry and shows clearly where the money is. Cover design by Michael Sonnenfeld*

DEPARTMENTS

79 ADVERTISERS' INDEX

6 IN MY OPINION

26 MEETINGS

67 MOVING AROUND INDUSTRY

57 NEW PRODUCTS AND SERVICES

56 PLANT MAN'S NOTEBOOK

80 THE WAY WE WERE

NEWS OF THE WEEK

10 **INFORMATION SERVICES FUTURE STILL UNCERTAIN**
Many questions remain on how U.S. District Court Judge Harold Greene's decision to let the RHCs offer only gateway service will affect the growth of the information services industry

10 **NO. TELECOM DIVES INTO CORPORATE NETWORKS**
The telecommunications manufacturer will apply its DMS SuperNode technology to private corporate networks

11 **ISDN'S DESTINY DEBATED IN DALLAS**
The first conference of users, carriers, manufacturers and financial analysts looks critically at where ISDN is going

FEATURES

32 **INDEPENDENT MANAGERS REPORT BIG SALARIES**
By Czatdana Inan and Larry Lannon. Find out what factors govern who earns what kind of salaries in this exclusive Independent salary survey

46 **CELLULAR SERVICE: A PRIMED MARKET, AT LAST**
By Ellis Booker. After weathering the turbulence of the past two years, the cellular industry at last seems to have conditions on its side for a better 1988

48 **TELOCATOR SETS SAIL FOR SAN FRANCISCO**
By Deborah Pfeiffer. Besieged with changes in 1987, Telocator kicks off a pivotal year Oct. 20-23 at its 39th annual convention in San Francisco

52 **PORTABLE CELLULAR: SIZING DOWN THE MARKET**
By Elizabeth Schultz. Increasingly lower prices and greater functionality may catapult portable units into the limelight of the cellular market

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Independent Managers Report Big Salaries

Several factors determine who earns what kind of salaries, including seniority and education, but excluding company location. Sex is not a factor, perhaps because there are so few women managers

CZATDANA INAN, MARKET RESEARCH DIRECTOR, AND LARRY LANNON, EDITOR

MAYBE MONEY motivates you. Maybe you are not employed by an Independent local exchange carrier. You may want to get your resume ready.

If you are employed by an Independent, pay attention. You are going to find this story interesting.

The story is based on information provided by Independent managers of all types. According to these sources, the Independent industry pays highly competitive management salaries, even at relatively junior levels. Senior managers frequently make excellent salaries, often in excess of $80,000 per year.

Salaries within the Independent industry fluctuate within a broad range. But even at the smaller companies, top managers bring home the bacon.

The presidents of small Independents, who frequently must wear several managerial hats, are paid well for their versatility. More than half, 58% to be precise, report they enjoy salaries of more than $60,000 per year. At the top end, 15% of small-telco presidents earn annual salaries of more than $95,000 and 5% earn annual salaries of more than $155,000 per year.

All the information in this story is based on the results of an exclusive salary survey of the Independent industry conducted this summer by *Telephony's* Market Research Department. For a review of the methodology employed, see the sidebar at right.

The survey provides an authoritative look at one of the most sensitive areas in the telecommunications industry: management salaries. It also unearths a wealth of information about the structure of Independent management.

Behind the Scenes

In the survey, *Telephony* distinguishes between larger and smaller Independents. The study goes into great detail on the management strata of the large, or Top 18, Independents. The focus is on the top of the management charts for the smaller Independents, mainly because they generally do not have complex management structures.

Table 1 on page 35 looks at the management structure, salaries, age and educational achievements of the Top 18 Independents.

Table 2 on page 39 looks at the salaries, age and educational achievements of the presidents of the smaller Independents.

Figure 1 on page 34 breaks down the data on the larger Independents by gender, age and educational achievements to provide a quick snapshot of the underlying strengths and characteristics of Top 18 managers. Figure 2 on page 38 performs the same function for the presidents of the smaller Independents.

Compare and Contrast

Comparing the two segments of the industry is instructive. Managers at

Methodology

THE survey is based on a nationwide random selection of 1000 independent industry managers.

To account for the weight of the 18 largest Independents, the sample was split into two segments: 800 managers at the operating companies of the 18 largest Independents and 200 presidents of smaller operating companies not affiliated with the 18 largest Independents.

Titles at the Top 18 companies were broken into nine groups: assistant manager, manager, staff manager, district manager, division manager, region/state manager, assistant vice president (including directors), vice president and president.

Identical questionnaires were mailed to each sample on June 24, 1987. As of July 31, 1987, 304, or 38%, of the 18 largest Independent recipients had responded, as had 67, or 34%, of the presidents of the smaller Independents.

The return reflected the original sample, both in terms of management levels and region. Of the 18 largest Independents—which dominate the Midwest—52% of the participants are in the Midwest, 12% in the Northwest, 14% in the West and 19% in the Southeast. A full 3% did not identify their locale. Of the small Independents, which dominate in the Midwest and West, 36% are in the Midwest, 33% in the West, 12% in the Southeast and 19% in the Northeast. □

the large Independents are fairly young, well-educated and most often male. Small Independent presidents are not as young but they also are well-educated. Surprisingly, though an overwhelming majority of small Independent presidents also are male, they are no more so than all managers, not just top executives, of the Top 18 Independents.

When it is recalled that many if not most small Independents are family-owned and -operated businesses in rural areas, the gender breakdown reflects the Independents' reliance on men for management talent.

Is the industry hurting itself by relying too much on men for management talent? Perhaps the intensification of competition in the next several years will provide an answer.

But the real strength of the *Telephony* survey is the hard look it takes into management's wallet (or purse). Take-home pay, the key economic unit, is healthy.

Not too surprisingly, the further up the ladder a manager rises, the better the pay becomes. The survey makes it clear that seniority alone does not carry a manager to the top. Nor does a company's location affect salary.

View From the Heights

Executives who rise to the top of the large-company segment of the Independent industry are well-paid. But one group of top executives reports annual salaries significantly below the norm for large Independents.

A robust 73% of Top 18 presidents report earning annual salaries in excess of $80,000 per year. Many presidents of Top 18 Independents can look forward eventually to carrying home even heavier paychecks since 36% enjoy annual salaries of more than $140,000.

However, 27% of the Top 18 presidents report earning annual salaries between $45,000 and $65,000 per year. Since the next salary category, which also happens to contain the largest group, is $95,000 to $110,000 per year, the presidents earning substantially less seem to be either underpaid or altruistic.

Presidents of Top 18 Independents tend to be over 45 years old and well-educated.

At the other end of the spectrum, Top 18 assistant managers usually earn less than $45,000 per year,

FIGURE 1 TOP 18 INDEPENDENTS (304 RESPONDENTS)

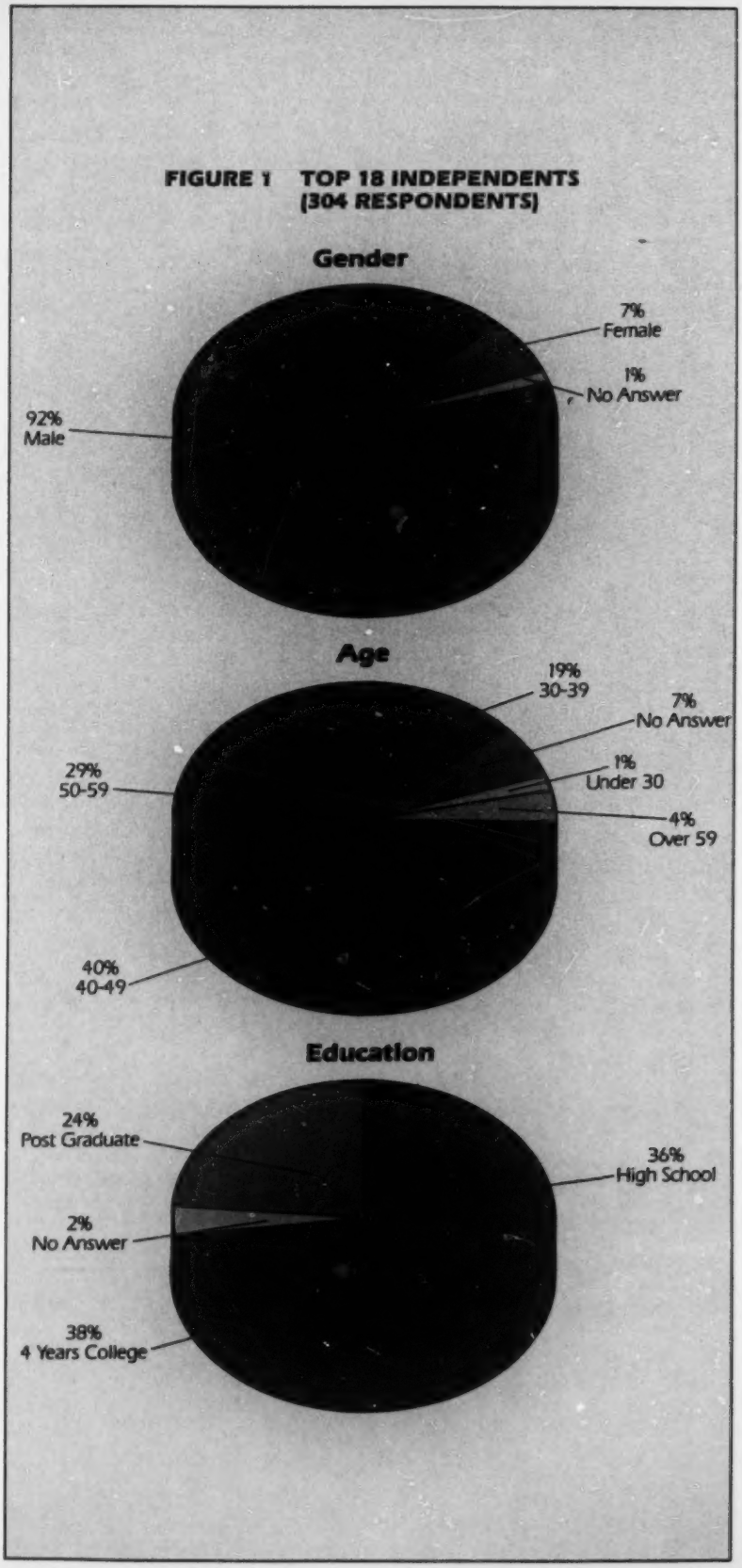

TABLE 1 TOP 18 INDEPENDENTS: MANAGEMENT LEVELS VS. AGE, EDUCATION AND SALARIES

% Total Sample (Base: 304)		Salary Distribution									Age in % Level	Median Age	Education			
		-$45K	+$45K	+$60K	+$80K	+$95K	+$110K	+$125K	+$140K	+$155K			High School	College	Post Grad	No Ans.
4%	Asst. Managers															
	45 or less	64%	27%								91%	39	36%	36%	19%	
	Over 45	9%									9%	51	9%			
	No age given										0%					
38%	Managers															
	45 or less	19%	26%	8%							53%	39	17%	18%	17%	1%
	Over 45	11%	26%	4%							41%	53	26%	11%	2%	2%
	No age given	3%	2%	1%							6%		3%	1%	1%	1%
4%	Staff Managers															
	45 or less	14%	22%								36%	41		29%	7%	
	Over 45		21%	29%							50%	50	8%	21%	21%	
	No age given		7%	7%							14%		7%	7%		
4%	District Managers															
	45 or less	7%	36%	7%							50%	37	7%	43%		
	Over 45	29%	14%	7%							50%	52	22%	14%	7%	7%
	No age given										0%					
3%	Division Managers															
	45 or less	37%		13%							50%	38	13%	24%	13%	
	Over 45	13%		24%	13%						50%	48	38%	12%		
	No age given										0%					
8%	Region/State Mgrs.															
	45 or less	4%	12%	16%	4%						36%	39	12%	24%		
	Over 45	20%	20%	8%	4%						52%	52	28%	20%		4%
	No age given	4%	4%		4%						12%			12%		
23%	Director, AVP															
	45 or less		7%	18%	7%						32%	40	3%	16%	13%	
	Over 45		13%	31%	13%	1%	1%				59%	52	16%	26%	17%	
	No age given		3%	6%							9%		3%	3%	3%	
12%	Vice President															
	45 or less	8%	6%	6%	13%	3%	11%			3%	50%	41	8%	11%	31%	
	Over 45		3%	10%	6%	8%	8%	3%	3%	6%	47%	52	22%	11%	14%	
	No age given			3%							3%		3%			
4%	President															
	45 or less						9%				9%	45		9%		
	Over 45		18%			28%			18%	18%	82%	52	18%	36%	28%	
	No age given		9%								9%			9%		

though a significant minority, 27%, earn more than $45,000 per year. Assistant managers never earn above $60,000 per year.

Predictably, assistant managers tend to be young. Only 9% are more than 45 years old. Importantly, the 9% over 45 invariably earn less than $45,000 per year and none completed college. The younger assistant managers frequently earn more money than their older colleagues and usually are better educated, with a large minority of 19% reporting they have completed a post-graduate degree.

Further up the corporate ladder, the situation becomes increasingly complex. The next category, called managers, earns between something under $45,000 per year to something over $60,000 per year. Nearly half are over 45 years of age. Another 53% are under 45.

Of the younger managers, 19% report an annual salary of less than $45,000, 26% earn between $45,000 and $60,000 per year, and 8% earn more than $60,000 per year. Of the managers over 45 years of age, 11% earn less than $45,000 per year, 26% earn between $45,000 and $60,000, and 4% earn more than $60,000.

Managers are more likely to break into the highest pay category if they are less than 45, but there are exceptions to that general rule.

The next most senior category in the survey is staff managers. Exactly half of all staff managers are older than 45. The salary range is identical to the range for managers, but fewer staff managers—14%, all of whom are younger than 45—earn less than $45,000 annually.

No less than 36% of the staff managers who responded earn more than $60,000 per year, and 29% are more than 45 years old. A whopping 28% of all staff managers have earned post-graduate degrees and 57% have taken home college degrees.

When managers at the Top 18

Continued on page 38

Independents get to the third rung on the management ladder, education starts to become a crucial determinant of their future.

The salary range for district managers is the same as for managers and staff managers. Analyzed as a function of age, district managers are evenly divided. Half are over 45 and half are under 45.

Only 14% report an annual salary of more than $60,000 and, again, half of that elite group is over and half is under 45 years of age. The largest group of the over-45 district managers, 29%, report annual salaries below $45,000. The largest component of the under-45 group, 36%, report annual salaries between $45,000 and $60,000.

These figures strongly suggest that district managers who are not tabbed as "comers" when they hit 45 years of age are likely to be surpassed by younger managers in the race for salary increases and promotions.

Movin' On Up

Division managers, the next most senior group, are also evenly divided between executives who have turned 45 and executives who haven't celebrated that particular birthday. But in this category, it is the older managers who do better on payday.

Curiously, the largest single group of division managers, 37%, reports it is under 45 and earns less than $45,000 per year. Only 13% of division managers report they are both over 45 years old and earn less than $45,000 per year. Another 13% report they are older than 45 and earn more than $80,000 per year.

Exactly half of all division managers earn more than $60,000 per year. No division manager below the age of 45 earns more than $80,000 per year.

A surprising number of division managers, 51%, did not earn a college degree, with older managers more likely to be among that group.

The salaries for regional and state managers resemble the salaries for division managers. For instance, 12% of regional and state managers earn more than $80,000, a significant minority earns less than $45,000, and most earn between $45,000 and $80,000 per year.

Managers in this category are

FIGURE 2 SMALL-INDEPENDENT PRESIDENTS (67 RESPONDENTS)

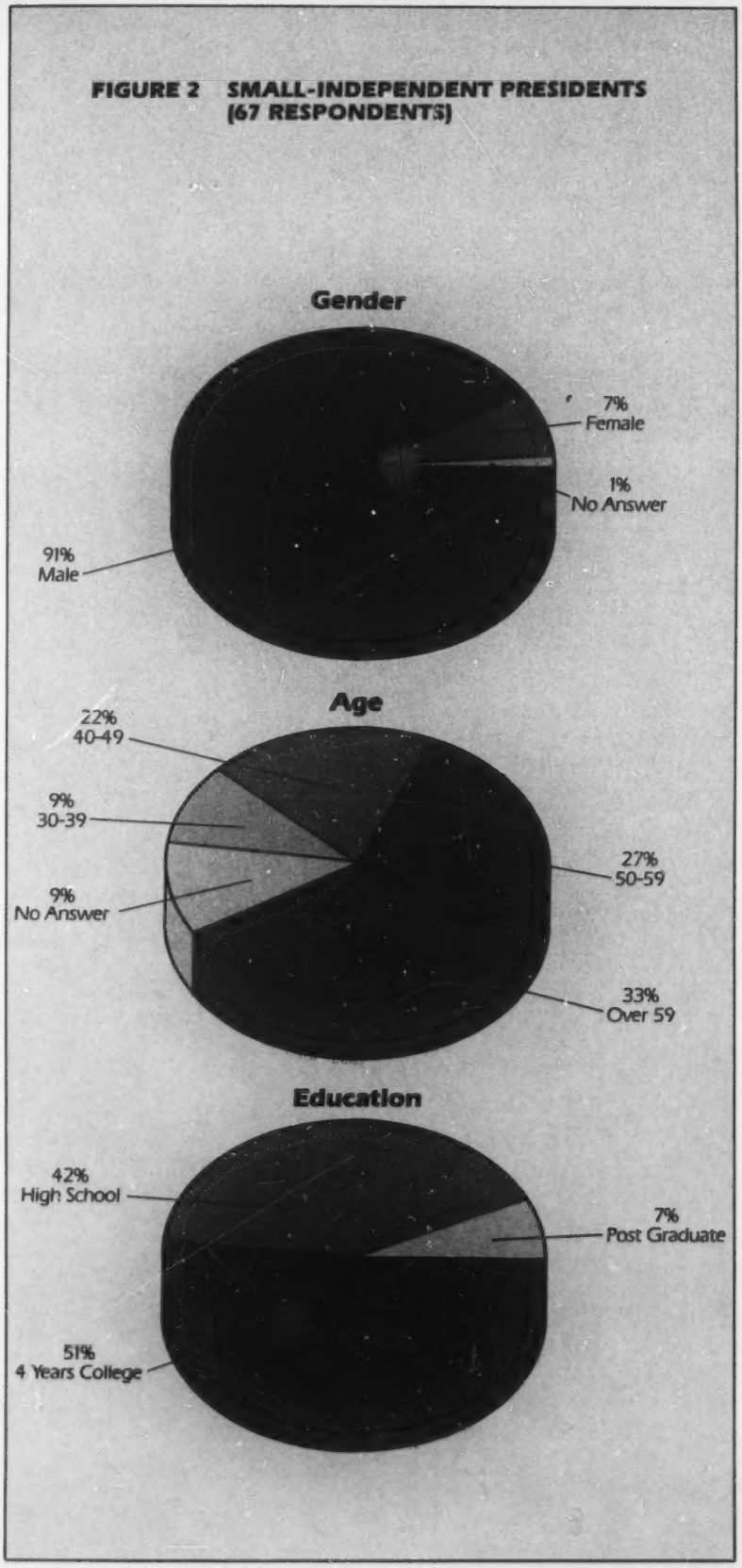

TABLE 2 SMALL-INDEPENDENT PRESIDENTS: AGE, EDUCATION AND SALARIES

% Total Sample (Base: 67)		Salary Distribution								Education			
		-$45K	+$45K	+$60K	+$80K	+$95K	+$110K	+$125K	+$140K	+$155K	High School	College	Post Grad	No Ans.
	Presidents													
19%	Under 45		7%	6%	3%	2%	1%				3%	12%	4%	
23%	45-55 years	2%	9%	6%	3%					3%	11%	11%		1%
30%	56-65 years	7%	6%	9%	4%	2%				2%	19%	11%		
19%	Over 65	7%		2%	6%	2%	1%	2%			9%	10%		
9%	No report		4%	3%	1%							9%		
	Total	16%	26%	26%	17%	6%	2%	2%		5%	42%	53%	4%	1%

more likely to be older than 45 and most have college degrees.

The Gold

The next category consists of managers who are directors or assistant vice presidents. The zeros start to make impressive strings at this point.

Most directors and assistant vice presidents are more than 45 years of age. A healthy 22% earn more than $80,000 per year, with 15% reporting an annual salary between $95,000 and $110,000 and another 1% enjoying an annual salary between $110,000 and $125,000.

In terms of age, directors and assistant vice presidents are nearly indistinguishable from regional and state managers. But 33% of the directors and assistant VPs have earned post-graduate degrees and 45% have college degrees.

Vice presidents, the next most senior group, have a better chance to earn large salaries. Oddly enough, 8% report salaries below $45,000. Most do much better. In fact, 64% earn more than $80,000 per year.

The range among vice presidential salaries is fascinating. For instance, 19% earn annual salaries between $110,000 and $125,000, 3% earn between $125,000 and $140,000, another 3% earn $140,000 and $155,000, and an upper crust of 9% earns more than $155,000 per year.

Half of the vice presidents are younger than 45. The young vice presidents are better educated than the older VPs. Twenty-two percent of the VPs have college degrees, half of them being younger and half older than 45. But 31% of the VPs younger than 45 have post-graduate degrees compared to 14% for VPs who already have turned 45.

The salary distribution for presidents of the Top 18 Independents is irregular. One message, however, comes through loud and clear: The top is where the money is.

A full 27% of the Top 18 presidents who responded earn between $45,000 and $60,000 annually. Another 28% enjoy annual salaries between $60,000 and $80,000. Nine percent carry annual paychecks between $110,000 and $125,000 back to wherever home is.

Oddly enough, that 9% segment uniformly is younger than 45, and includes the only Top 18 presidents who are younger than 45. One group of 18% earns annual salaries of $140,000 to $155,000 and another 18% earn more than $155,000.

The Top 18 presidential group is extremely well-educated. A full 28%, all of whom are over 45 years of age, have earned post-graduate degrees. The majority, 54% to be precise, of the Top 18 presidential group has earned college degrees. A minority of 18%, all of them over 46 years old, has earned high school degrees.

Small Telco Leaders

The distribution of salaries among the presidents of small telcos is very wide. No less than 16% earn less than $45,000 in annual salary. On the other extreme, 5% earn more than $155,000 in annual salary.

Most are between those poles. A majority of 52% earn an annual salary between $80,000 and $95,000.

A group of 6% earns an annual salary between $95,000 and $110,000, another 2% earn between $110,000 and $125,000, and another 2% earn between $125,000 and $140,000.

Few small-telco presidents have completed post-graduate work. Only 4% have post-graduate degrees.

But a majority, 53%, have college degrees. A third group, 42%, make up the significant minority who have high school degrees.

Most small telco presidents are middle-aged. A full 53% are between 45 and 64 years of age. The spectrum at either end is perfectly balanced since 19% are less than 45 and 19% are more than 65. Nine percent of small telco presidential respondents declined to disclose their age.

Comparing the Top 18 managers with the presidents of the small telcos is interesting.

The two industry segments are identical on the gender issue. Exactly 7% of Top 18 managers and small telco presidents alike are female. Another 1% from each group declined to identify themselves by sex.

Not surprisingly, small telco presidents are older than the managers of the Top 18. Only 4% of the managers of the Top 18 are over 59 years of age, while 33% of the small telco presidents have celebrated their 59th birthday. Nineteen percent of the Top 18 respondents were 30 to 39 years of age, while only 9% of the small-telco presidents fell into that age bracket. The majority of both groups are in their productive, high-earning middle years. The parallels between the educational backgrounds is illustrative of how much the industry segments have in common and where they are likely to diverge.

Forty-two percent of the small-telco presidents hold high school diplomas, slightly more than the 36% of Top 18 managers who report an identical educational level. Among Top 18 managers, 38% have college degrees, while slightly more small-telco presidents, 51%, have their sheepskins.

The big difference between the

Continued on page 42

two groups is apparent when the post-graduate degrees are compared. As noted, 7% of small-telco presidents have post-graduate degrees, compared with 24% of the Top 18 respondents.

Obviously, both the large and small wings of the Independent industry are willing and able to pay large annual salaries for talented managers. Among the Top 18, those talented managers are found distributed roughly equally above and below the 45-years-of-age dividing line. But the younger managers are more likely to be better educated and usually more likely to enjoy annual salaries at the upper end of the spectrum for their particular classification than their older colleagues.

The salary spectrum opens up at the senior levels. And, of course, it is at the top that the truly magnificent annual salaries are found. Small-telco presidents earn very healthy salaries, though again the salary spectrum is broad.

One major difference between the senior managers of the Top 18 and the small-telco presidents is the better education enjoyed by the former, particularly when post-graduate work is used as the measuring stick.

Another clear message carried by this survey is that there are precious few women in the managerial ranks of the Independent industry, though the smaller, more rural companies are no different in this respect than larger, more urban companies.

Competition is likely to intensify sharply in the next several years. It will be interesting to see how it affects overall salary levels, the concentration of rewards at senior levels of organizations, the function of education as a spur to career advancement and the role women play on competitive management teams.

For now, Independent industry managers can rest assured they are in an industry which pays handsome salaries to corporate achievers.

Entertainers like Bill Cosby and Madonna reportedly earn many millions of dollars each year.

Independent industry managers generally aren't as funny as Cosby or as spectacular as Madonna, and they don't bring home as much money either. But most Independent managers are doing well, thanks, and have solid reasons to think they will earn more in the future if both the company and the individuals achieve their goals. □

Managers Review Priorities

CUSTOMER SERVICE, return to shareholders and responsibility to company employees are the top priorities of managers in the Independent industry.

As part of an exclusive survey of management salaries in the Independent industry, *Telephony's* Market Research Department asked respondents to identify which "aspect of your current job responsibilities is most important to you?" All respondents are anonymous. Anonymity is used to encourage candid responses, and candid they were.

The president of a small Independent in the Northeast provides the most comprehensive reply. Her most important responsibilities are "keeping up with FCC, congressional and state PSC rulings, providing the best new equipment for our expanding service area and planning how we can finance it. Keeping our employees alert, well-trained and eager to be part of a *quality* company.

"We like our business and think we are an asset to the area," she concluded.

Service

A vice president-operations with a Top 18 Independent in the Midwest is succinct in identifying his priorities: "service quality, employee development and shareholder return."

An executive vice president with a Top 18 company from the West emphasizes the dynamism of his job. This young executive said his top priority is "managing the change which swept through our industry; that is, the technological changes, the financial changes and the resulting resource adjustments."

A VP of operations in the plant department of a Midwestern Top 18 Independent emphasizes employees. His top priority is "being able to help employees develop and progress into more responsible positions and enjoy their accompiishments."

Many respondents identify priorities which are clearly a function of their specialties or specific responsibilities.

For instance, a young VP of customer relations with a Top 18 Independent in the West says her top priority is "anticipating areas that will cause problems for customers and eliminating them *before* they can do damage."

A VP of engineering with 25 years of service who is working with a Top 18 company in the Midwest says "people development, new technology, the integration of voice and data" are his main priorities.

A young VP of technical development for a Midwestern Top 18 company reports that "coordination of technical development activities between multiple business units (including non-telephone)" is his focus.

Change

The president of a small Independent in the Midwest notes that he has twin goals: "planning for the very uncertain future of a small Independent telco and trying to maintain universal service."

The president of another small Midwestern telco likewise cites two top goals: "providing a positive rate of return to my stockholders" and providing the "best possible service to our customers."

One small-telco president from the Midwest declines to cite a specific priority due to his manifold responsibilities. "As owner-manager of a tiny telco with only two other employees," he writes, "I work in all aspects."

Another small-telco president from the West makes the same point in fewer words. His top priorities are "impossible to determinel" he writes emphatically.

An assistant manager of CO equipment engineering with a Top 18 company in the West writes that his focus is "developing each engineer to be open-minded, to explore novel and creative ways to solve problems."

But not everybody looks only at a job description when it comes to setting priorities. The president of a Top 18 company in the West believes his main priority is "to slow down this senseless and wasteful drive to make our industry more competitive."

This blunt executive adds a playful parenthetical note: "Guess who?"

That is the problem with anonymous surveys. One can only guess.

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OCTOBER 12, 1987

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'WE HAVE MADE PROGRESS' On the eve of USTA's 90th convention, incoming Chairman Carl Bailey discusses the industry and his USTA agenda

IBM MOUNTS PBX CHALLENGE
With a new system, IBM vies for U.S. and international market edge

NORTHERN TELECOM BUYS STC STAKE
The switch supplier gains small foothold in European market

OCTOBER 12, 1987 Volume 213, No. 15

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

South Central Bell Telephone President and CEO Carl F. Bailey steps into the USTA chairmanship at this year's annual meeting Oct. 13-15 in Orlando, Fla. As he discusses with Editor Larry Lannon in an exclusive interview, he is ready for the job. All photos, including cover, by Bud Hunter

DEPARTMENTS

117 ADVERTISERS' INDEX

8 IN MY OPINION

37 MEETINGS

118 MERITS AND MILESTONES

98 MOVING AROUND INDUSTRY

82 NEW PRODUCTS AND SERVICES

80 PLANT MAN'S NOTEBOOK

NEWS OF THE WEEK

12 **IBM MOUNTS PBX CHALLENGE**
With a new system, IBM vies with Northern Telecom and AT&T for U.S. and international market edge

12 **NORTHERN TELECOM BUYS STC STAKE**
With a share of this British firm, Northern Telecom gains a small foothold in the European market

13 **BELLSOUTH EXPANDS AXE USE**
Ericsson will add central office functions to the switch already in use as an STP

FEATURES

38 **'WE HAVE MADE PROGRESS'**
Carl F. Bailey, president and CEO of South Central Bell Telephone, begins his one-year tenure as chairman of USTA at this week's annual convention. In this exclusive interview by Editor Lar.y Lannon, Bailey discusses his ideals for the industry

46 **THE INDUSTRY IS WATCHING ORLANDO**
By Carol Wilson. Getting right down to business Oct. 13 in Orlando, Fla., the USTA will tackle issues such as the definition of manufacturing

53 **USTA 1986: THE WAY IT WAS**
By Elizabeth Schultz. Issues that surfaced at USTA's 1986 convention will reappear on this year's agenda

58 **LEC DEPRECIATION IN 1986**
By David J. Morgan. This comparative study by the USTA engineering subcommittee on depreciation reviews the depreciation expense activity of the 14 largest domestic LECs

64 **BELLCORE'S ISDN BASIC ACCESS TRANSPORT**
By Howard A. Scott and Martin H. Millman. Bell Communications Research has proposed generic requirements on ISDN basic access transport for operating telephone companies

72 **CONSIDER ALL THE ANGLES FOR FO CABLE**
By Giovanni P. Tomasi. Total system requirements must be taken into account when choosing fiber optic cable

76 **NCF DELIVERS MIXED BAG**
By Susan Ubis. The National Communications Forum played host to a flood of executives, vendor representatives and educators Sept. 28-30 in Rosemont, Ill.

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A Comparative Study: LEC Depreciation in 1986

DAVID J. MORGAN

DEPRECIATION is one generally accepted cost of doing business. Telephone companies record depreciation expense as part of their annual operating costs.

This expense plays two important roles: It is part of the utility's internally generated funds used to modernize telephone plant and equipment, and it is a cost component in the calculation of local telephone-service rates. Determining the correct amount of depreciation insures the best possible telephone service at the best possible price.

The United States Telephone Association engineering subcommittee on depreciation recently reviewed the depreciation expense activity of the 14 largest domestic local exchange carriers. These LECs represent approximately 95% of the total local exchange industry.

To assist in the review, the subcommittee asked an industry ad hoc capital-recovery methods group to collect publicly available depreciation data from each of the major LECs. The information was prepared on a holding company basis; additional depreciation data, detailed by state and operating company, was also collected.

1986 Activity

During 1986, the largest LECs recorded $14.8 billion in depreciation expenses. This amount represents an annual composite depreciation rate of 7.6%. The composite rate is a weighted mix of the depreciation rates for each class or type of telephone plant and equipment. The depreciation rate is the percentage applied to the plant and equipment dollar accounts to determine the amount of depreciation expense for an accounting period. Each type of telephone plant or equipment account may have a different depreciation rate due to the length of time each type is economically or functionally useful.

The historical total depreciation for the major LECs at year-end 1986 was $57.1 billion, or 28.5% of the total year-end depreciable plant balance of $199.9 billion. This percentage is referred to as the reserve ratio. It is the ratio of the historical depreciation reserve accounts to the capital investment balance in the related asset accounts.

The objective of depreciating is to recover 100% of the original cost of the plant equipment in the time between its installation and retirement. During 1986, the major LECs retired $6.9 billion of old or obsolete plant and equipment. As a percentage of average annual depreciable assets, this is a retirement ratio of 3.6%.

Each major LEC furnished a summary of its year-end plant balances, reserve balances, depreciation accruals and annual retirement amounts. The information was given

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TABLE 1 LEC DEPRECIATION INDEXES

DOMESTIC TELEPHONE OPERATIONS		1986 YR BEGIN PLT BAL	1986 YR END PLT BAL	1986 AVERAGE PLT BAL	1986 RESERVE BALANCE	1986 TOTAL ACCRUAL	1986 TOTAL RETIRES	1986 COMPOSITE DEPR RATE	1986 RESERVE RATIO	1986 RETIREMENT RATIO
ALLTEL	AL	$1692	$1766	$1729	$595	$107	$84	6.2%	33.7%	4.9%
AMERITECH	AM	20,526	21,887	21,207	6964	1653	687	7.8	31.8	3.2
BELL ATLANTIC	BA	21,322	22,874	22,098	6739	1891	706	8.6	29.5	3.2
BELLSOUTH	BS	26,230	28,214	27,222	7123	2044	768	7.5	25.2	2.8
CINCINNATI BELL	CB	1042	1096	1069	339	74	46	6.9	30.9	4.3
CENTEL	CE	2096	2129	2113	681	150	94	7.1	32.0	4.4
CONTEL	CO	4231	4544	4388	1356	326	194	7.4	29.8	4.4
GTE	GT	21,106	22,300	21,703	6686	1783	1233	8.2	30.0	5.7
NYNEX	NX	22,399	23,535	22,967	7083	1595	850	6.9	30.1	3.7
PACIFIC TELESIS	PT	19,885	21,671	20,478	5368	1567	604	7.7	25.5	2.9
SNET	SN	2704	2826	2765	1026	197	87	7.1	36.3	3.1
SW BELL	SB	19,629	21,055	20,342	5080	1423	627	7.0	24.1	3.1
UNITED	UN	5856	6063	5960	2193	497	377	8.3	36.2	6.3
U S WEST	US	19,367	20,548	19,958	5821	1494	599	7.5	28.3	3.0
Major Telcos (PR Basis)		$188,085	$199,908	$193,996	$57,054	$14,802	$6956	7.6%	28.5%	3.6%

for each company in each state. From the data, the three key depreciation indexes were computed and examined: depreciation rate, reserve ratio and retirement ratio. Indexes were derived for each company and for the local exchange industry (Table 1). Figures 1, 2 and 3 were derived from this data.

The timely depreciation of telephone plant and equipment is paramount. All parties involved in telephone service will recognize the benefits of a progressive depreciation process as the telephone industry continues to use new technologies in providing new services. □

Glossary

Depreciation Rate:

1. The depreciation rate level is a function of the service life of the plant or equipment.
2. A higher rate of depreciation increases the reserve ratio.

Retirement Ratio:

1. Technology-/and service-demand requirements may drive plant and equipment modernization programs. Accelerated economic or functional obsolescence may produce higher amounts of retirements.
2. Retirements of plant and equipment decrease the depreciation reserve ratio.

Reserve Ratio:

1. A higher reserve ratio may indicate older plant and equipment that has not been subject to many retirements.
2. A higher reserve ratio may show depreciation rate results from a favorable preparation plan accompanying an aggressive modernization program.
3. A lower reserve ratio may indicate inadequate historical depreciation rates.
4. A lower reserve ratio may result from an aggressive modernization program without adequate depreciation rates.

FIGURE 1
MAJOR U.S. TELCOS
1986 Composite Depreciation Rates

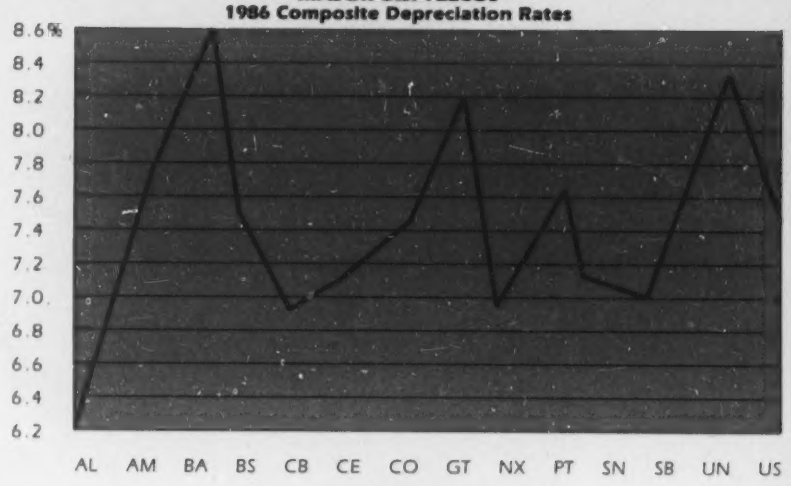

FIGURE 2
MAJOR U.S. TELCOS
1986 Retirement Ratios

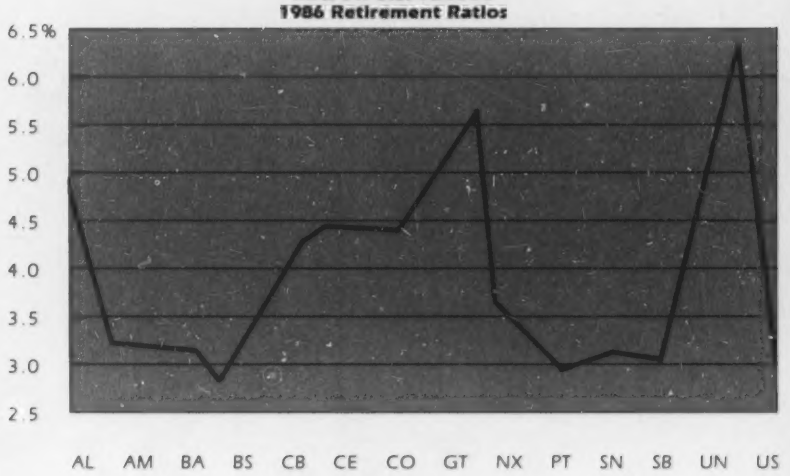

FIGURE 3
MAJOR U.S. TELCOS
1986 Reserve Ratios